

● **WASTE**

Turning Waste into Wealth in the 21st Century

● **RECYCLING**

Building Green Businesses That Work: From Fashion to Fuel to Farms

● **KEY DATA**

Facts and Figures

● **STATE OF PLAY**

Mobiles Transforming Green Solutions: A How-to Guide **Pages 26-27**



Empowered lives.
Resilient nations.

SouthernInnovator

A magazine celebrating South-South innovation

ISSUE 05

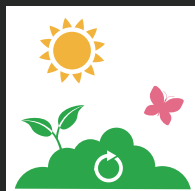
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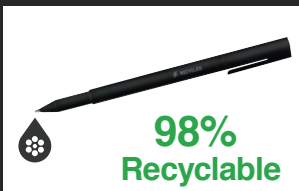
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Improving Human Development with Finite Resources

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Southern Innovator

Welcome to the fifth issue of **Southern Innovator (SI)** magazine. Our fourth issue, on the theme of cities and urbanization, was launched in October 2013 at the Global South-South Development Expo in Nairobi, Kenya. It was a joy to meet so many innovators at the Expo, hear their stories and receive feedback on the magazine.

This fifth issue tackles the dilemma of how to continue to improve human development on a planet heading for a population of more than 9 billion by 2050 and with a finite quantity of physical resources. To achieve this, a radical new perspective is required; one that values all resources and sees ways to turn waste into wealth and to transform the way that things are made.

One solution gaining more advocates is the “cradle-to-cradle” philosophy. It goes beyond the “reduce, reuse and recycle” approach, instead calling for a revolution in how goods are made. It seeks to eliminate all waste in the life cycle of a product and to eradicate forever the idea that items can just be thrown away when they are used up, only to then pollute the planet with toxic waste.

Another discovery made while researching this issue is that it is possible to meet all the world’s energy needs using clean technologies and renewable resources. Tapping the geothermal resources bubbling and hissing under the ground could supply vast amounts of energy. One eco-city in China is getting 20 per cent of its energy from renewable sources and is using solar panels stretching 6 kilometres as a power source, along with wind turbines and ground heat energy. In short, energy does not have to be dirty and poisoning.

One of the vexing issues in creating a sustainable, new green economy is how to make it economically viable. Many try and fail, give up, and go back to doing things the conventional way. But, as the innovators in this issue show, it is possible to succeed by doing things differently, being persistent and placing good design at the centre of green solutions.

Buckminster Fuller, the twentieth-century futurist, architect, engineer and inventor, who believed in radical change through a design revolution, once said: “You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.” And this is what the innovators featured in this issue are doing.

In each issue of **Southern Innovator**, you will find contact information for further follow-up. We have attempted to provide the most current information, but given the quick pace of change in the global South, this is not always possible. We apologize in advance for any out-of-date information, including Internet links. We hope that this magazine makes a useful contribution to your work and helps to inspire all to act!

Cosmas Gitta
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Southern Innovator
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Waste & Recycling

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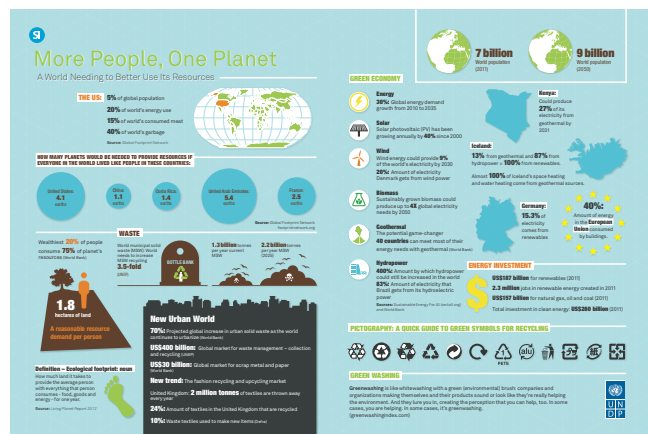
United Nations Office for South-South Cooperation

Website: ssc.undp.org



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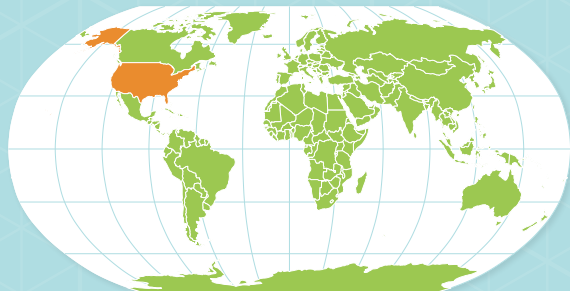
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More People, One Planet

A World Needing to Better Use Its Resources

THE US: 5% of global population
20% of world's energy use
15% of world's consumed meat
40% of world's garbage

Source: Global Footprint Network



HOW MANY PLANETS WOULD BE NEEDED TO PROVIDE RESOURCES IF EVERYONE IN THE WORLD LIVED LIKE PEOPLE IN THESE COUNTRIES:

United States:
4.1
earths

China:
1.1
earths

Costa Rica:
1.4
earths

United Arab Emirates:
5.4
earths

France:
2.5
earths

Source: Global Footprint Network
footprintnetwork.org

WASTE

Wealthiest **20%** of people
consume **75%** of planet's
resources (World Bank)



World municipal solid waste (MSW): World needs to increase MSW recycling
3.5-fold
(UNEP)



1.3 billion tonnes
per year current
MSW

2.2 billion tonnes
per year MSW
(2025)



New Urban World

70%: Projected global increase in urban solid waste as the world continues to urbanize (World Bank)

US\$400 billion: Global market for waste management – collection and recycling (UNEP)

US\$30 billion: Global market for scrap metal and paper (World Bank)

New trend: The fashion recycling and upcycling market

United Kingdom: **2 million tonnes** of textiles are thrown away every year

24%: Amount of textiles in the United Kingdom that are recycled

10%: Waste textiles used to make new items (Defra)

Definition – Ecological footprint: noun

How much land it takes to provide the average person with everything that person consumes – food, goods and energy – for one year.

Source: Living Planet Report 2012





7 billion

World population
(2011)



9 billion

World population
(2050)

GREEN ECONOMY



Energy

30%: Global energy demand growth from 2010 to 2035



Solar

Solar photovoltaic (PV) has been growing annually by **40%** since 2000



Wind

Wind energy could provide **9%** of the world's electricity by 2030

20%: Amount of electricity Denmark gets from wind power



Biomass

Sustainably grown biomass could produce up to **4X** global electricity needs by 2050



Geothermal

The potential game-changer
40 countries can meet most of their energy needs with geothermal (World Bank)



Hydropower

400%: Amount by which hydropower could still be increased in the world

83%: Amount of electricity that Brazil gets from its hydroelectric power

Sources: Sustainable Energy For All (se4all.org) and World Bank



Kenya:

Could produce **27%** of its electricity from geothermal by 2031

Iceland:

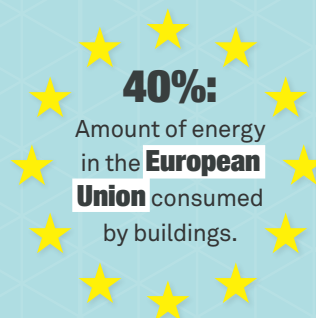
13% from geothermal and **87%** from hydropower = **100%** from renewables.

Almost **100%** of Iceland's space heating and water heating come from geothermal sources.



Germany:

15.3% of electricity comes from renewables



40%:

Amount of energy in the **European Union** consumed by buildings.

ENERGY INVESTMENT



US\$187 billion for renewables (2011)

2.3 million jobs in renewable energy created in 2011

US\$157 billion for natural gas, oil and coal (2011)

Total investment in clean energy: **US\$260 billion** (2011)

PICTOGRAPHY: A QUICK GUIDE TO GREEN SYMBOLS FOR RECYCLING



PETE



GREEN WASHING

Greenwashing is like whitewashing with a green (environmental) brush: companies and organizations making themselves and their products sound or look like they're really helping the environment. And they lure you in, creating the perception that you can help, too. In some cases, you are helping. In some cases, it's greenwashing. (greenwashingindex.com)



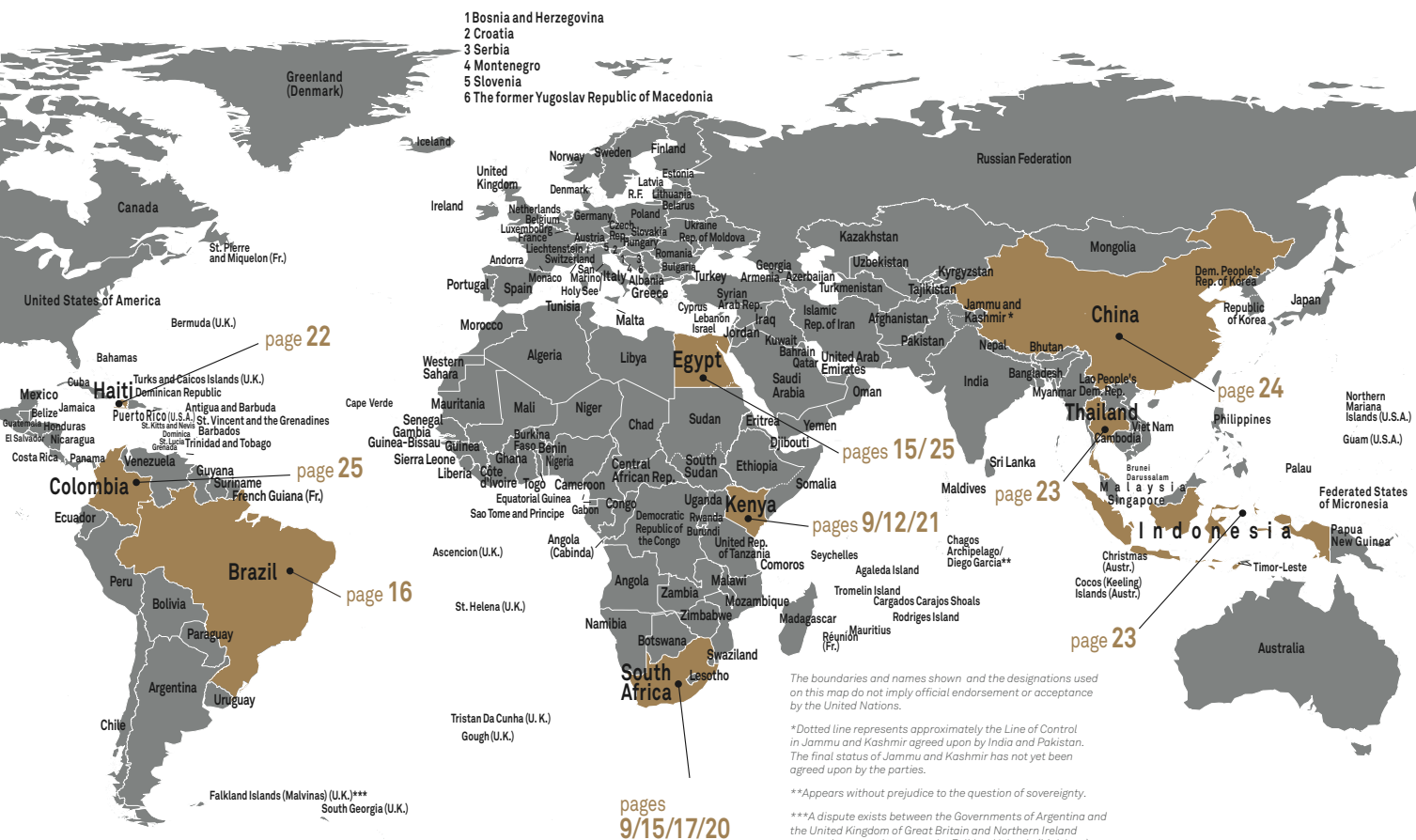
Introduction

The world's growing population is becoming ever more urban. This transition has the potential to dramatically improve human development while reducing the stress that we place on the world's resources. But this is not a certain outcome and will not happen unless people make radical changes to the way in which they live their lives.

The products and resources that people use to improve their living standards also deplete finite resources and often leave pollution and toxic waste behind. It has become clear that the current approach to manufacturing and developing products is wasteful and generates vast quantities of refuse. And the current approach to creating energy, heavily dependent on burning polluting fossil fuels, is contributing to climate change and harming the planet. In short, things have to change, and dramatically.

However, it is not a time to lose hope: the range of solutions to these challenges is vast, and many innovators and pioneers are developing new ways to do things. Too few people realize it, but tapping geothermal resources could transform access to energy for many developing countries. In East Africa, Kenya is investing in geothermal energy and hopes to get 27 per cent of its electricity from this source by 2031. The World Bank believes that about 40 countries worldwide have geothermal resources that could meet a very significant portion of their national electricity demand.

Is it possible to earn an income in this green economy, however? Based on the evidence in the stories presented in this issue, the answer is yes. Taking urban waste as an example, it is forecast that global municipal solid waste (MSW) recycling needs to increase 3.5-fold (UNEP) as the world continues to urbanize. This could either be a disaster for living conditions and the planet or an opportunity to change views towards waste, seeing it as a wealth-creating opportunity. Many are seizing this waste “problem” and creating solutions.





African Innovation Eco-system Taking Shape

As websites such as **AfriGadget** (afrigadget.com) amply prove, there is already an entrenched do-it-yourself innovation culture hardwired into daily life on the continent.

But now new technologies will also accelerate the spread of new ideas and solutions.

Identifying the elements that are making this innovation culture flourish came under analysis in a recent post on the **Afrinnovator** website (afrinnovator.com).

Afrinnovator argues that there are four elements that have come together to change circumstances for innovators on the continent: education, mentoring and incubators, funding and showcase events.

Afrinnovator concludes: "This is the last virgin tech landscape left on the planet. The best time to become a player in the African technology innovation ecosystem is now." – (July 2012)



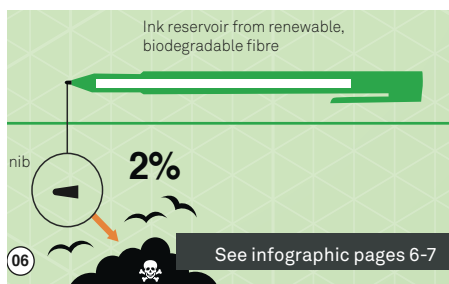
Image: iHub Nairobi (ihub.co.ke)

Profile of African Innovators Continues to Rise

A mix of developments is proving that African innovators no longer need to see themselves as lone operators working in isolation. Awareness of the continent's talent has never been higher and is grabbing attention from the world's media.

This summer saw the launch of a new publication called **African Innovator Magazine** (africaninnovatormagazine.com). It is a good example of how perceptions have switched to recognizing that the continent is awash with innovators who have a lot to say.

Billing itself as "Technology insights for Africa's decision makers," *African Innovator* interviews business leaders on the continent about how they are driving innovation within their organizations. – (September 2012)



Quick Facts

- The Oslo Manual for measuring innovation has defined four types of innovation: product innovation, process innovation, marketing innovation and organizational innovation.
- Since 2005, six new science academies have been established in Mauritius, Morocco, Mozambique, Sudan, United Republic of Tanzania and Zimbabwe. This compares to nine established between 1902 and 2004.
- The *UNESCO Science Report 2010* found that Burkina Faso, Kenya, Nigeria and South Africa had adopted laws to support biotechnology research.
- The Innovation Prize for Africa, begun in 2011, awards US\$100,000 for the top innovation that matches its criteria of marketability, originality, scalability, social impact and business potential.

Sources: UNESCO and OECD

African Supercomputers to Power Next Phase of Development

Increasing computing power in Africa will bring in its wake, it is hoped, a surge in economic and research opportunities.

The new supercomputer, the **iHub Cluster**, is being built in the Kenyan capital by one of Africa's pioneering information technology hubs – **iHub Nairobi** (ihub.co.ke/pages/home.php) – in partnership with Internet products and services company Google and micro-chip maker Intel Corporation.

The iHub supercomputer hopes to help universities and colleges to gain a competitive edge and be able to undertake more complex research in the fields of media, pharmaceuticals and biomedical engineering. – (October 2012)

Q & A

At the **Alexander von Humboldt Research Institute** in Bogota, Colombia, researchers have been thinking about how to balance urban development and the environment to make sure the growing cities of the future are not ecological disasters.

According to **Juana Marino** at the Institute's **Biological Resources Policy Programme** – which investigates "Biodiversity, Ecosystem Services and Urban-Regional Environments" – how cities grow and develop must change.

SI How is the trend towards rapid urbanization affecting the planet and the creation of waste?

The more people who arrive in cities, the more they demand goods and services (in a massive way!) – roads, housing, infrastructure, food, water – [creating] an impressive amount of waste, challenging traditional waste management and sanitation policies.

SI What role can innovation play?

Innovation is not just an option; it is a "must", and not just the technical innovation already being carried out by infrastructure, transport and building sectors that are rapidly changing their patterns based on mitigation technologies.

Innovation is also needed in terms of biodiversity, biotechnology, information and knowledge production; appropriation, use and management. Knowledge turns into innovation when appropriated by social spheres, when it enters the social and political arenas.

(humboldt.org.co)

2030
The United Nations goal for universal access to modern energy services



1.6 billion
Number of people still lacking access to electricity



23%
Amount of electricity generated from geothermal sources in the Philippines



24
Number of countries using geothermal energy to meet the needs of 60 million people (GEA)



Sources: World Bank, Geothermal Energy Association and United Nations





Read about how the Baker cookstove is using design to boost take-up of energy-efficient cookstoves in Kenya on pages 47-48.

Using Design for a Waste-free, Energy-efficient Future

As the world continues to become a majority urban place in the 21st century, the issue of waste will become even more vexing. Just as people move to urban areas to improve their life chances and standard of living, the things that they use to improve their standard of living – consumer electronics, clothing, higher-quality foods, furniture – all generate waste. Much of this waste, as a result of current production methods, produces toxic waste that ends up in municipal dump sites or is thrown away to clutter streets and green spaces. Toxic waste created in the developed countries often is shipped to developing countries, where it is recycled or disposed of, sometimes using child labour and in violation of appropriate environmental standards.

A World Bank study projects a 70 per cent global increase in urban solid waste, with developing countries facing the greatest challenges. This report estimates that the amount of municipal solid waste (MSW) will rise from the current 1.3 billion tonnes per year to 2.2 billion tonnes per year by 2025. Much of the increase will come in rapidly growing cities in developing countries.

By 2050, two out of every three people on the planet will live in a city. This will place unprecedented stress on the world's natural resources if things do not change.

As living standards rise and the number of middle-class consumers grows in developing countries and emerging markets, it is clear that replicating the wasteful consumption patterns of the developed world will do irreparable harm to the planet. At present, the world's wealthiest 20 per cent of people consume 75 per cent of the planet's resources (World Bank).

"We are living as if we have an extra planet at our disposal. We are using 50 per cent more resources than the Earth can sustainably produce and unless we change course, that number will grow fast: by 2030 even two planets will not be enough," said **Jim Leape**, Director General of **WWF International**.

The **Living Planet Report** uses the global **Living Planet Index** to measure changes in the health of the planet's ecosystems by tracking 9,000 populations of more than 2,600 species. The global Index

shows almost a 30 per cent decrease since 1970, with the tropics the hardest hit – where there has been a 60 per cent decline in less than 40 years. Just as biodiversity is on a downward trend, the earth's ecological footprint, one of the other key indicators used in the report, illustrates how the planet's demand on natural resources has become unsustainable.

In order to calculate what is a sustainable use of resources per person, the ecological footprint was devised. Given the current world population and available land area, an ecological footprint of less than 1.8 global hectares per person makes a country's resource demands globally replicable. The top-10 countries with the biggest ecological footprint per person are: Australia, Belgium, Canada, Denmark, Ireland, Kuwait, Netherlands, Qatar, United Arab Emirates and the United States of America. Citizens of the United States are consuming resources at a rate that, if done by every person on earth, would require 4.1 earth-sized planets.

Wealthy countries have an ecological footprint five times larger than that of low-income countries.

"We can create a prosperous future that provides food, water and energy for the 9 or perhaps 10 billion people who will be sharing the planet in 2050," added Leape. "Solutions lie in such areas as reducing waste, smarter water management and using renewable sources of energy that are clean and abundant – such as wind and sunlight."

The world needs to build a genuine green economy to tackle these challenges. A green economy tends to be seen as an economy that produces goods and services with an environmental benefit. And the energy sources for this green economy need to change. United Nations Secretary-General Ban Ki-moon has called for a doubling of renewable energy in the mix of energy sources by 2030.

Read on to find innovators building a green economy that works and learn from their experience.

In addition, the infographics on pages 6 to 7 and on pages 28 to 29 attempt to paint a picture of the challenges and offer a new way of looking at things to find better solutions.

Sources: World Bank, WWF International, *Living Planet Report*.



Texting for Cheaper Food with SokoText

Graduate student social entrepreneurs from the London School of Economics (LSE) are pioneering a way to reduce food prices in Kenya using mobile phones.

Answering a call to action to address global food insecurity by the **Hult Prize**, the team looked at how they could make food cheaper for urban slum dwellers.

The Hult Prize is a start-up accelerator for budding young social entrepreneurs emerging from the world's universities. The winner receives US\$1 million and mentorship to make her/his idea become real.

“ The interested retailers would be required to send us an SMS every evening detailing what they need ”

SokoText uses short message service (SMS) messages from mobile phones to empower vegetable sellers and kiosk owners in slums when it comes to bargaining the price for wholesale fresh produce. It makes it possible for them to benefit from bulk prices by pooling all their orders every day. Usually the vendors lack the funds to buy in bulk and have to make numerous time-consuming trips to the centre of Nairobi to buy stock.

SokoText reduces the price of fresh produce by 20 per cent for kiosk owners by buying the produce earlier in the supply chain. SokoText then delivers the food to a wholesale outlet at the entrance to the slum.

This approach makes available a wider range of produce and reduces the price. And best of all, it will knock down prices for the poorest people and enable them to buy more and better-quality food.

The team members behind SokoText are from a variety of countries: Canada, Colombia, Germany, Kenya and the United Kingdom.

Hatched at the LSE, the enterprise prototyped its service in Mathare Valley, Nairobi, Kenya, for four weeks during the summer of 2013. They started with 27 users of the service and began the second phase of testing in November 2013; they are working with a local NGO, **Community Transformers**.



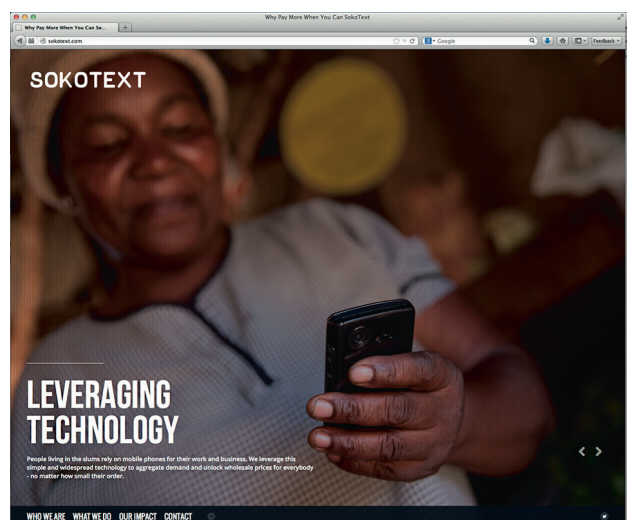
Suraj Gudka (above), the 21-year-old co-founder and Chief Executive Officer of SokoText.

According to SokoText, slum dwellers are spending 60 per cent of their daily budget on food.

Mobile phones are a good choice since they are now a common communications tool, even in slums.

On their website, **Erik Hersman**, the respected blogger and commentator on technology in Africa, said of SokoText that it “represents a fantastic low-tech approach that could really scale for decreasing the inefficiencies in urban slum markets.”

Telling the blog 140friday.com, 21-year-old co-founder and Chief Executive Officer of SokoText **Suraj Gudka** explained: “From our research, the Mama Mbogas [small-scale vegetable retailers] spend between 150-200 K Sh [Kenyan shillings] [US\$1.70 to US\$2.30] daily, about 25 per cent of their revenue, to buy their stock, and since they do not buy in bulk, they get their goods at a higher price.”



The SokoText website (sokotext.com).



SokoText co-founder Sofia Zab (left). She oversees SokoText's marketing strategy and manages SokoText's technology products.

Getting the market traders to cooperate is very difficult, Gudka found, because competition is fierce and trust is low. SokoText sees itself as a solution to this situation.

It gathers together all the orders from the traders using SMS text messaging and then buys the goods in bulk at a much cheaper price.

"To use our service, the interested retailers would be required to send us an SMS every evening detailing what they need," according to Gudka, "and then we will source the produce and they come pick it up from us the next morning. In this way, they do not have to incur the additional costs of transporting their goods and it also saves them time."

SokoText is being incubated at the **Nailab** in Nairobi, a start-up accelerator that offers a three-to-12 month entrepreneurship programme, with a focus on growing innovative technology-driven ideas.

SokoText's summer pilot test confirmed that taking the orders can work but found that getting the product to the market in time was difficult.

The next step will be to set up a presence in the Mathare slum: "We will be selling about seven to 10 different kinds of produce, and from our calculations, according to our projections for how much the Mama Mbogas buy every day, we hope to get 40-50 customers within three months."

- sokotext.com
- nailab.co.ke
- hultprize.org
- whiteafrican.com/about



Meet Southern Innovator

The fourth issue

Southern Innovator (SI) comes packed with stories, images and contact details about a new generation of pioneering innovators across the global South.

Global reach

SI is distributed around the world, from the buzzing new urban megacities of the South to the poorest places on earth.

Stories to learn from

There isn't a better way to learn than from others in the same situation. SI's stories share details on success and innovation and have links to resources – so that readers can get down to work.



Rich infographics

Complex data and trends are transformed into clear graphics for ease of understanding.

Eye-catching illustrations and graphics

Concepts are reinforced through visual images to aid understanding.

Getting connected

Southern Innovator is packed with resources and is backed up with a website and a monthly e-newsletter. Each issue is intended to provide inspiration and practical information to get started on the journey to being a Southern innovator!



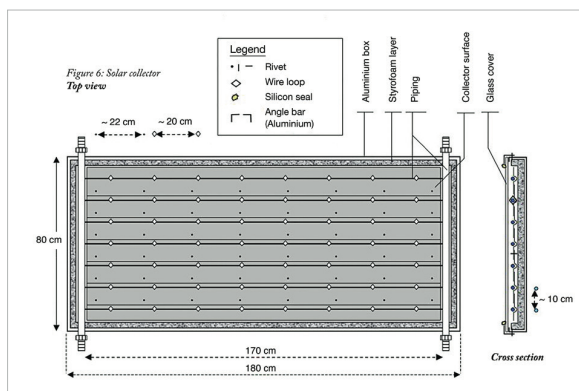
About 2.7 billion people in developing countries lack access to clean energy for cooking. By turning to biogas from waste as a solution, access to this affordable gas for cooking and heating can cut household costs.

(International Energy Agency, 2010)

In Cairo, Egypt, a pioneering innovator is making biogas using a roof-top, solar-powered digester.

Follow @SouthSouth1





The biogas digester system (above left) and making the solar panels (bottom left and right).

Innovation: Cairo's Green Technology Pioneers

An enterprising Egyptian man is showing his community how it is possible to lower the cost of gas and hot water while also avoiding the service disruptions common with municipal utilities. In the process, he is pioneering a local green innovation model that can be replicated elsewhere.

Biogas generators – which can transform organic household waste into fuel – have been very successful in China and India. It is estimated that there are 20 million small-scale urban biogas digesters in China and 2 million in India.

Hanny Fathy's roof in the Manshiyet Nasser neighbourhood, home to the Coptic Christian Zabaleen community of Cairo – the city's traditional garbage collectors and recyclers – is now a utility system, providing biogas and hot water.

Fathy plops kitchen scraps, stale tea and tap water into a jug that he empties into a homemade biogas maker on the roof of his house. The stew of waste mixes with water and a small quantity of animal manure used to start the process and overnight makes biogas, which is then

used for cooking. The digester is able to provide an hour's worth of cooking gas a day in winter months, and two hours in the summer, from around 2 kilograms of waste. The remaining waste by-product becomes liquid organic fertilizer for the garden.

Fathy has been developing the biogas digester with the NGO **Solar Cities**, which provides designs, technical advice and support to Cairo citizens keen to embrace green technologies.

"I'm planning to collect the organic waste from restaurants in the neighbourhood to increase my gas output," he told IPS News. "I'll give the restaurants plastic bags and they can separate out the organics, and I'll collect the bags at the end of each day." – (January 2010)



An African "long-drop" toilet.

Turning Human Waste into Fertilizer: An African Solution

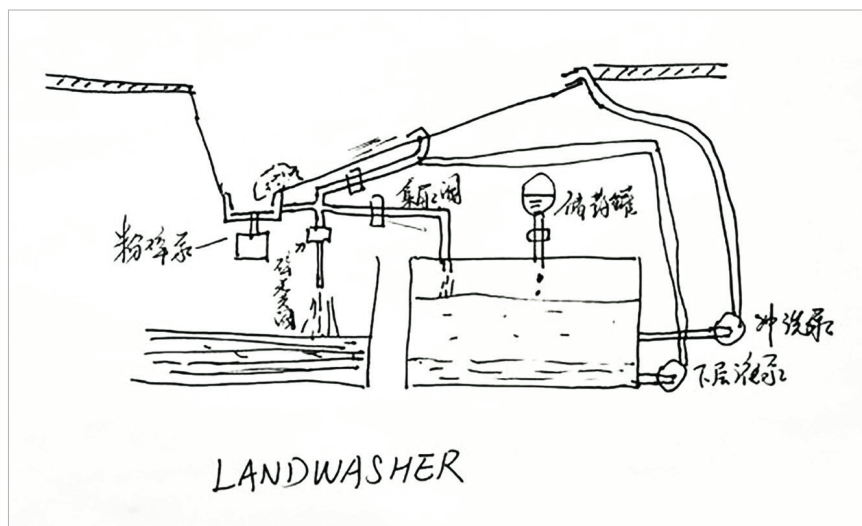
According to the Council for Scientific and Industrial Research, some 11 million South Africans have received access to basic sanitation services since 1994, but 13.3 million still lacked basic sanitation services by 2008.

The **Water Research Commission (WRC)** believes that there is a crisis with South Africa's toilet pit latrines, which are quickly filling up past their original design capacity. WRC's solution is to turn the human faeces or faecal sludge deposited in pit latrines into fertilizer for farming and agriculture. The Water Research Commission is advocating using the fertilizer either for fruit trees or for trees that will be turned into income sources such as paper and fuel.

The WRC project and series of experiments are called "What happens when pit latrines get full?"

"Only one third of municipalities have a budget to maintain on-site sanitation," WRC researcher and scientist **David Still** told Inter Press Service (IPS). "If pits fill up, all the hard work that was done to address the sanitation backlog will be wasted. Why not use faecal sludge to address the growing problem of food insecurity by planting fruit trees? Or use the sludge to cultivate trees for fuel or paper production?" – (July 2012)

- wrc.org.za
- csir.co.za
- water.worldbank.org/shw-resource-guide/infrastructure/menu-technical-options/pit-latrine



How the Landwasher toilet works.

Saving Water to Make Money

The world's water supplies are running low, and according to the World Health Organization (WHO), four out of every 10 people are already affected. But despite the gloomy reality of this problem, entrepreneurs in the South are rising to the challenge to save water.

One unnecessary waste of water is car washing. The number of cars in developing countries is growing fast, with a 27 per cent increase in sales in China this year and South America overtaking Asia as the world's fastest-growing regional vehicle market (Global Auto Report). And all these cars will be washed, wasting this precious resource.

The large informal car-washing market in Brazil has long been known for paying low wages and avoiding taxes. On top of this, it also wastes water. Lots and lots of water. In Brazil, 28.5 per cent of the population (41.8 million people) do not have access to public water or wastewater services and 60 per cent do not have adequate sanitation (Brazilian Institute of Applied Economic Research).

Started in 1994, **Drywash** uses a locally available Brazilian organic car-nauba wax to clean cars without using water. Drywash has also developed a line of cleaning products that cleans every part of a car without the need for water. It estimates that it has saved 450 million litres of water in its first 10 years of operation. From the start, it set out to change the status quo and run a business that "thinks like a big corporation," said its international partner, **Tiago Aguiar**.

To do this, Drywash's management team focused on operating an efficient and professional business. When the Government of Brazil passed strict laws against informal selling of products, Drywash was well positioned to benefit, with companies preferring to work with a legal business. Customers have also been attracted to Drywash because they know that the service is consistent and to a high standard. Drywash made US\$2.7 million in 2005.

In China, **Landwasher** toilets are tackling the growing problem of pro-

Solar-powered Mobile Clinics to Boost Rural Health Care in Africa

One recently launched new solution is a solar-powered mobile health clinic that is bringing 21st-century medical diagnostic services to rural areas.

The US\$250,000 **Solar Powered Health Centre** has been built by the Korean technology company **Samsung**.

A truck packed with medical equipment that draws electricity from solar panels is travelling to rural, underserved parts of sub-Saharan Africa. The truck is seven metres in length and comes packed with medical goods, including a fully equipped eye and blood clinic and a dental surgery. It hopes to make it easier to reach the six in 10 residents of sub-Saharan Africa who live in rural areas and who are often very far from affordable medical services.

Samsung hopes to scale the initiative to a million people in Africa by 2015.

"This experience has shown us how desperately medical treatment is needed across the continent and inspired us to develop a sustainable and innovative solution to reach the people who need it most," said **Ntutule Tshenye**, Business-to-Government and Corporate Citizenship Lead for **Samsung Africa**. "While our CSR [corporate social responsibility] strategy in Africa is largely focused on education, our efforts to enrich lives will not be felt if people's basic needs, such as access to health care, are not met." – (August 2013)

• samsung.com

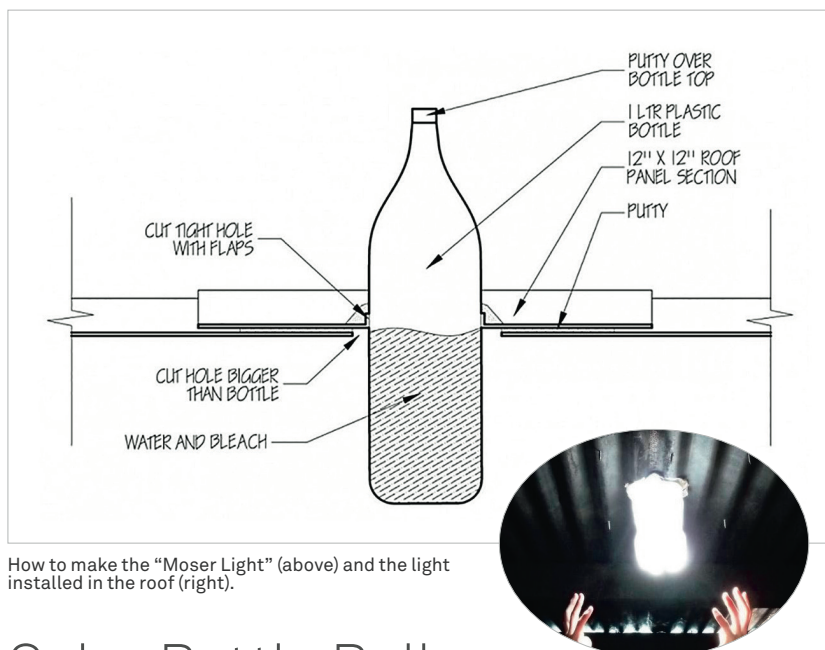


Samsung's solar-powered classroom.

viding flush toilets to the country's 1.32 billion people. Landwasher has patented a process using a special agent and sterilization to dispose of human waste without using water and using very little electricity.

Landwasher has seen its sales grow to 40 million yuan (US\$5.2 million) and has six sales offices covering 27 provinces. – (September 2007)

• drywash.com.br • nextbillion.net • landwasher.com



Solar Solution to Lack of Electricity in Africa

After witnessing the struggle that African health clinics have to access electricity, a Nairobi, Kenya-based company has developed a simple solution to ensure a steady supply of solar electricity. **One Degree Solar's** founder, **Gaurav Manchanda**, sells the **BrightBox** solar charging system for lights, mobile phones, tablet computers and radios.

He first gained experience working in the West African country of Liberia with the **Clinton Health Access Initiative**. Working at the Ministry of Health, he found that most health clinics operated without electricity.

He identified solar power as the only viable energy source. Trying to deliver fuel to power generators by the road network had two impediments: the diesel fuel was expensive and the road conditions were poor.

After seeing that large solar-powered systems required significant maintenance and upkeep, he started to explore the possibility of low-cost and simple-to-use solar electricity products that would be useful to community health-care workers.

The company's main product is the BrightBox, a cleverly designed solar charger. A bright orange box with a folding, aluminium handle at the top for easy carrying, it switches on and off simply with a bright red button. It has a waterproof solar panel. The BrightBox has universal service bus (USB) ports so that mobile phones and radios can be plugged in. It is also possible to plug in four lights at once using the four outlets on the side of the box.

A full charge can power two light bulbs for 20 hours. Manchanda told **How We Made It In Africa** that he has sold 4,000 units of the BrightBox since its launch in October.

The products are designed to be repaired using locally sourced parts and can be fixed by local electricians. – (June 2013)

- onedegreesolar.com
- clintonfoundation.org
- howwemadeitinafrica.com

Solar Bottle Bulbs Light Up Dark Homes

Brazilian innovator and mechanic **Alfredo Moser** has taken the common plastic water bottle and created a low-cost lighting solution for dark spaces. Often makeshift homes lack decent lighting or a good design that lets the light in during the day. This means that it may be a bright, sunny day outside, but inside the home or workplace, it is very dark and reading or working is difficult.

The "**Moser Light**" involves taking plastic bottles, which are usually just thrown away or recycled, and filling them with water and bleach to draw on a basic physical phenomenon: the refraction of sunlight when it passes through a water-based medium.

It is a simple idea: Holes are drilled in the ceiling of a room and the bottles are placed in the holes. The liquid-filled bottle amplifies the existing sunlight (or even moonlight) and projects it into the dark room. This turns the plastic bottle into a very bright light bulb that does not require any electricity.

Moser uses a solution of two capfuls of bleach added to the water to prevent anything growing in the water such as algae because of the exposure to sunlight.

"The cleaner the bottle, the better," he said.

Polyester resin is used to seal the hole around the plastic bottle and make it watertight from rain.

Moser's bottle innovation can produce between 40 and 60 watts of light.

Liter of Light, run by the **MyShelter Foundation**, offers instructions on how to install the lighting system on its website. – (September 2013)

- aliteroflight.org



Information Technologies Transforming Africa

Africa is in the midst of an Internet revolution that is set only to accelerate. The continent is one of the last places to experience the information technology revolution that has swept the world in the past two decades.

Africa has been at a disadvantage for several reasons, the most basic of which has been the lack of bandwidth capacity available from the undersea cables that connect other continents to the Internet. A map showing the world's undersea cable links says it all: the majority of traffic goes between Europe and the United States.

But this is changing: a glance at recent developments with the launching of the Seacom, EASSy, MainOne and other cables shows a continent becoming better connected by the year. This is increasing the continent's Internet capacity and bandwidth.

These communications links will revolutionize the type and scale of innovation that can happen in Africa.

Between 2011 and 2015, seven out of the 10 fastest-growing economies in the world are projected to be in sub-Saharan Africa. The conditions are ripe to grow African Internet businesses.

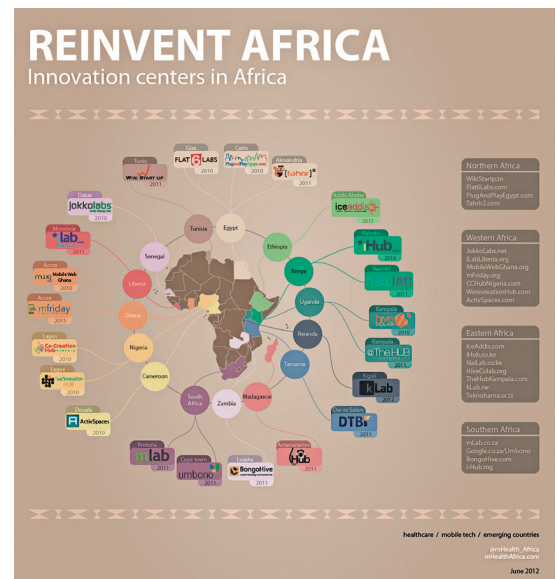
According to the World Bank, "Kenya has put in place the second-fastest broadband on the continent (after Ghana), which has reduced the wholesale Internet capacity prices by over 90% and increased Internet penetration from 3% to 37% of the population in the past decade. Today, about 90% of Kenyan adults have or have the use of a mobile phone."

Identifying the elements that are making this information technology innovation culture flourish came under analysis in a post on the **Afrinnovator** website. Afrinnovator is dedicated to "telling the stories of African startups, African innovation, African made technology, African tech entrepreneurship and entrepreneurs."

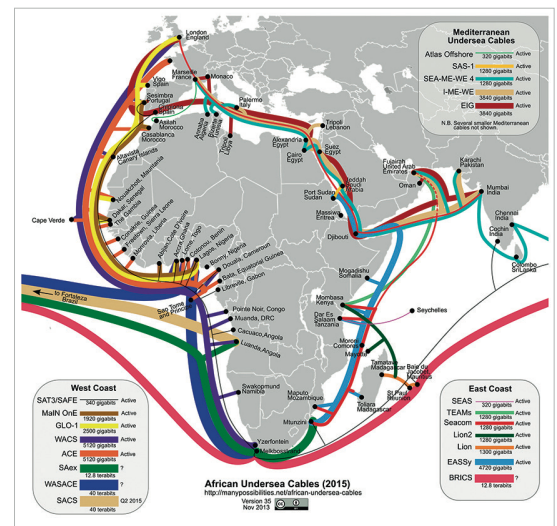
While it is well known that new infrastructure, better governance, new policies, and new services such as mobile phones and mobile money have made a big difference in shifting perceptions of Africa from despair to optimism, Afrinnovator found that there were other key ingredients in this innovation renaissance.

Afrinnovator argues that four elements have come together to change circumstances for innovators on the continent: education, mentoring and incubators, funding, and showcase events.

Afrinnovator found that education was critical to the quality of emerging technological innovations. Information and communication technology (ICT) education has moved from just computer science courses to a vast array of options.



A plethora of innovation hubs and centres have emerged across Africa. For further details, go to the image's website here: mhealthafrica.com/infographic-2-reinvent-africa



A plethora of undersea cables linking Africa to Europe, Asia and North America. For further details, go to the image's website here: manypossibilities.net/african-undersea-cables

For mentoring and incubators, Afrinnovator found that hubs and incubators are providing places for young educated people to go to and get down to work.

Examples include **iHub**, **mLab East Africa**, **ccHub (Co-Creation Hub Nigeria)**, **Lusaka**, **Zambia's Bongohive**, **iLab Africa**, **NaiLab**, **iBid Labs**, and **Uganda's HiveColab**. These places offer like-minded fellowship and access to mentors to take them on the journey from "idea to viable profitable business."

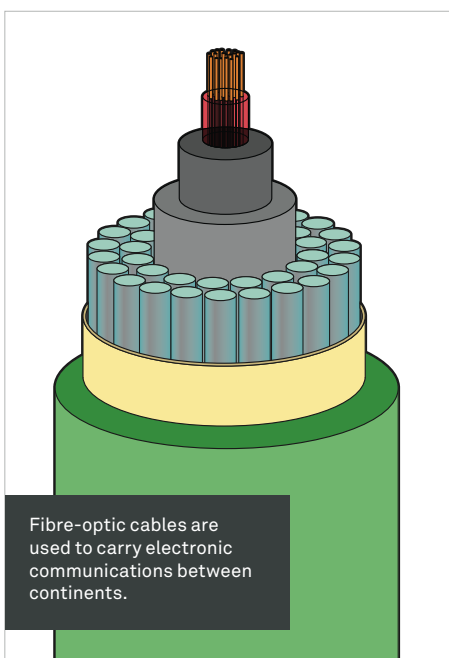
According to Business Daily Africa, “There are more than 3,000 software developers who have come up with both mobile and personal computer-based software applications that are changing lives across the continent.”

A transformation in funding access has also led to a renaissance in new thinking that is transforming tech start-ups into viable businesses. Kenya has the **Kenya ICT Board** and it awards US\$50,000 through its **Tandaa** grant programme.

Because of this enthusiastic local support, the World Bank is now committing a US\$55 million grant targeting Kenya’s technology innovators to be distributed through the Kenya ICT Board.

While Africa has come late to the Internet party, the continent can benefit from two decades of experience elsewhere to avoid making the mistakes that others have made. Africa can upload tried and tested Internet platforms and can also create new, Africa-specific platforms that tackle the continent’s own needs and challenges.
– (July 2012)

- africaninnovatormagazine.com
- innovationprizeforafrica.org



Garbage is collected for recycling, cleaning up tourist areas.

A Solution to Stop Garbage from Destroying Tourism

The small, tourist-friendly Indonesian island of Bali – known for its idyllic pleasures of spas, surf and serenity – is being overwhelmed by garbage. A survey of tourists found that two thirds would not return to the island because of the problem.

Tourism took off on the island in the 1970s. The economic benefits are clear: the island went from being economically marginal to ranking second only to the country’s capital, Jakarta, in wealth creation. The island received more than 2.38 million tourists in 2009, up 14.5 per cent compared with 2008, according to Ida Komang Wisnu, head of the provincial statistics office. But tourism produces on average 5 kilograms of waste a day per tourist – 10 times what the average Indonesian produces (Bali Fokus).

In the past, the traditional way of serving food in Indonesia was to wrap it in, or serve it on, a palm leaf: a biodegradable approach. But with the huge expansion in the use of plastics and non-biodegradable packaging, the waste disposal problem is out of control.

In Indonesia, government garbage disposal services tend to collect between 30 and 40 per cent of solid waste, most of this from high-income communities. The majority of the poor population is left to fend for itself when it comes to waste disposal.

A solution by **Yuyun Ismawati**, an environmental engineer and consultant, has since 1996 focused on helping poor communities to find ways to safely dispose of waste. In 2000, she started her own NGO, **Bali Fokus**, and opened a waste management facility in the Bali village of Temesi. The recycling plant employs 40 people from the village, who sort garbage into recyclables, compost and residual waste. Income from the recycled waste and compost goes to helping local farmers. – (March 2010)

- balifokus.asia/balifokus
- goldmanprize.org



The Water-free South African Bathing Solution

A clever South African, **Ludwick Marishane**, has developed a clear gel that works like soap and water but doesn't need H₂O to get a person clean.

The product is called **DryBath®** and uses a "proprietary blend of a biocide, bioflavonoids and moisturisers." It differs from common liquid hand anti-bacterial cleanser products that people use to sterilize hands. Those products use alcohol to simultaneously kill germs and evaporate the liquid.

DryBath® works in a different way by not requiring water or alcohol to complete the washing. The liquid gel is odourless and biodegradable, moisturizes and does not need to be rinsed off. It instead leaves users smelling fresh and "tackles the hygiene and water consumption problems in a manner that has never been used before."

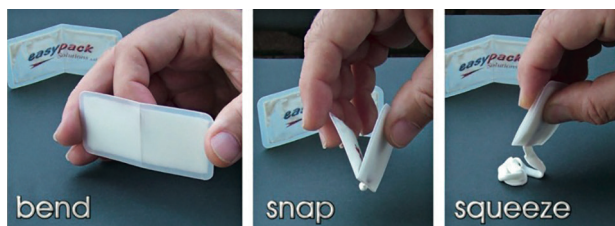
It also comes in a special package developed in South Africa. EasySnap™ sachets allow users to quickly snap the package and dispense the solution onto their hands to have a wash.

“DryBath® will go a long way in helping communities”

Marishane, a 22-year-old student at the University of Cape Town, told Reuters that the idea for DryBath® had come to him when he was a teenager living in his rural home. It was wintertime and his friend didn't want to bother washing because there was no hot water available.

"He was lazy and he happened to say, 'Why doesn't somebody invent something that you can just put on your skin and you don't have to bathe'," Marishane said.

Intrigued, he started doing research on his web-enabled mobile phone. He trawled through the search engine Google and the online encyclopedia Wikipedia to find what would work as a water-free wash. After six months of research, he came up with the formula for DryBath® and acquired a patent. Now the strategy of **Headboy Industries Inc.**, – the company set up by Marishane, is to sell DryBath® to corporate clients and in turn donate a free sachet for each sale to DryBath®'s global charity partners, who will distribute DryBath® to poor communities either for free or at a subsidized cost.



DryBath® comes in a handy plastic dispenser for ease of use.

Marishane believes that his product will be particularly popular with certain industries: flight crews and passengers on airlines; hotels looking to save on water usage; the military for soldiers serving in the field; and NGOs and charities providing services to poor communities, in particular during emergency situations when it is difficult to provide a reliable water supply.

Marishane has won several awards for his invention, including Global Champion of the Global Student Entrepreneurs Awards 2011, and is considered South Africa's youngest patent holder.

"DryBath® will go a long way in helping communities," he believes. – (September 2012)

- headboy.org/drybath
- headboy.org



Biogas Digester-in-a-Bag Brings Portability

Biogas is fuel made from biodegradable organic material such as kitchen, animal or human waste. It can be converted into gas either by being heated or using anaerobic bacteria to break down the material and turn it into combustible methane gas.

Most biogas systems are complex and large, involving an enormous domed biodigester.



Flexi Biogas digester before it has filled up with gas.

But a clever solution from Kenya, the **Flexi Biogas** system, is different. It is designed to be highly portable and scalable depending on a person's needs. The Flexi Biogas system is a pillow-shaped PVC tarpaulin, measuring 6 metres by 3 metres. It comes in two parts: a plastic digester bag on the inside and a greenhouse-like plastic tunnel on the outside. The tunnel traps heat and keeps temperatures between 25 and 36 degrees Celsius.

Subjected to the heat of the sun, the environment inside the bag encourages microbes to digest the organic material, or substrate as it is known, releasing biogas bubbles and inflating the bag with methane. This gas is then sent through a PVC tube that can be connected to a gas-burning appliance such as a cooking stove.

Currently, most people use the biogas for lighting and cooking but the system also produces enough gas to run agricultural machinery.

The Flexi Biogas digester sits on the ground and thus is easy to observe and understand.

The Flexi Biogas system is designed, built and sold by Kenya's **Biogas International**, which has sold 200 of the systems since 2011. In 2012, the



1



2



3

IMAGES

- 1 The Flexi Biogas digester filled with gas.
- 2 Assembling the Flexi Biogas system.
- 3 Filling the Flexi Biogas digester with excrement.

company partnered with – the United Nations' International Fund for Agricultural Development (IFAD) to install nine systems on dairy farms in Kenya. These Flexi Biogas systems use kitchen and human waste to produce electricity for lighting and to provide Internet service.
– (December 2012)

- biogas.co.ke
- ifad.org



Ending Gang Violence while Cleaning the Streets in Haiti

The Caribbean country of Haiti is the poorest country in the western hemisphere, with 80 per cent of the population living below the poverty line (CIA World Factbook). The country had been enjoying some positive economic growth since 2005 after decades of economic and political turmoil.

The country's political vacuum and economic problems gave rise to violent gang rule on its streets and a collapse in public services, in particular garbage collection. The piles of waste became a source of disease and squalor as well as providing barricades for gangs to wage their street battles.

Haiti was also hit by four devastating hurricanes in 2008, with heavy damage to the country's agricultural sector and transport infrastructure.

But a project by the UNDP **Special Unit for South-South Cooperation** has turned around a Haitian neighbourhood by simultaneously cleaning up the garbage, creating employment and income and reducing gang violence and despair. The United Nations has been working in Haiti to restore the economy and bring peace and good government to the country since the 1990s. Its most recent mission, MINUSTAH, has been running since 2004.

Called "**Love n' Haiti**" and located in the Carrefour Feuilles district of the capital Port-au-Prince, the project used a ground-up strategy to tackle the problem of waste removal.

The neighbourhood has a population of 150,000. Nine community leaders were identified and a management committee was set up called the **Comité d'action sanitaire de Carrefour Feuilles (CASCAF)**. The management committee then undertook difficult negotiations with local street vendors to establish garbage collection points. A waste collection plan was drawn up, and around 400 workers were hired to clean the streets and canals and collect the waste.

The workers were divided into nine street cleaning teams and three waste collection teams, comprising people who were members of rival groups.

The project started in 2006 from a very basic point: generating awareness in the population about the dangers of waste and the need for its disposal. The breakdown in public services from decades of political turmoil and poverty had meant that a culture of waste disposal no longer existed. The project drew on similar experiences in Brazil and used Brazilian expertise.

A triage centre was set up to sort the waste into paper, plastic, metal, glass and organic matter for recycling. Two products are made from the waste to earn income: cooking briquettes and fertilizer.

The cooking briquettes may also help stem Haiti's horrific deforestation. The country shares the island with the Dominican Republic and anyone



Waste is turned into cooking briquettes and fertilizer.

flying over the island can see a sharp dividing line between the green and lush forests of the Dominican Republic and the almost barren and dusty Haitian hills.

By turning the trash into cooking briquettes, people are being offered an alternative to chopping down the forests and burning trees to make charcoal fuel for cooking.

Income for the waste collectors has increased to US\$3 a day and the project has removed 70 per cent of the neighbourhood's waste, making it easier to get around and get things done (another boost to incomes).

Prior to the project, the neighbourhood was one of the most dangerous in Port-au-Prince. The project unexpectedly found that the history of violence and conflict were quickly overcome when the project began to make rapid progress.
– (October 2009)

- ssc.undp.org/Home.118.0.html
- minustah.org
- theworldchallenge.co.uk

Turning Animal Waste into Paper

Animal waste is a messy fact of daily life in rural communities across the global South. This by-product of life has many uses but an ingredient for making writing paper is probably not the first that springs to mind.



The elephant excrement is laid out flat and then dried to make paper.

But animal dung is cleverly being recycled into high-value products in Sri Lanka and Thailand. Animal waste has many uses: it can be turned into fertilizer for crops and fuel for cooking, placed in a digester and fermented into biogas for heating, and, cooking, and, if from a herbivore, into fibrous products such as paper and cardboard. Packing boxes can also be made from the excrement.

Since the elephant is a vegetarian its excrement or dung is made up of vegetable matter and is rich in cellulose. And cellulose is what makes up the majority of traditional wood-pulp paper.

Dung produces a natural, recycled paper. While harvesting trees for paper is an expensive and energy-wasting process, the elephant's digestive tract does the hard work by breaking down the cellulose, making it ideal for the next stage in becoming a paper product.

The **Elephant Dung Paper** company in Thailand was one of the first to pioneer

the technique. This business was started by dung paper pioneer **Mr. Wan Chai**. He tells a story of how he became enchanted by the paper-making process when he walked past a paper factory one day. Later, when he was at the **Thai Elephant Conservation Center** in Lampang, northern Thailand, he noticed that the elephant dung was rich in fibres like those used in making paper from wood pulp.

Inspired, he embarked on a process of trial and error using his wife's food processor to turn elephant dung into a fibrous stew that is then shaped, dyed and dried to make paper.

Another dung paper business is **Mr. Ellie Pooh** in Sri Lanka. Established with the goal of reducing conflict between humans and elephants, it has turned to making paper products to boost local incomes and create a direct economic incentive to protect the elephants. It is setting up handmade paper workshops in rural areas and teaming them up with artisans to add value to the products

and make them more desirable. Design is critical to making any product – no matter how ethically produced and how green – desirable to consumers.



The dung products that Mr. Ellie Pooh makes include a wide variety of coloured papers, scrapbooks, note boxes, stationery pouches, greeting cards, "to do" list pads, memo books and a children's book.

The process of making elephant dung paper takes about 13 days: three days of sorting, boiling and disinfecting, followed by 10 days to pulp, mix, press and dry the paper. Mr. Ellie Pooh makes about 1,000 sheets a day and 30,000 a month. Each sheet makes six A4-size pieces of paper.

The company was founded by **Dr. Karl Wald** and **Thusitha Ranasinghe** and is managed by recycled paper firm **Ecomaximus** based in Colombo, Sri Lanka, with a workshop in Kegalle. – (January 2011)

- environmentalpaper.org/stateofthepaperindustry/confirm.htm
- elephantdungpaper.com
- changthai.com
- mrelliepooh.com
- ecomaximus.com



How an Eco-city Works

An eco-city is rising from former industrial wasteland in China. The Sino-Singapore Tianjin Eco-city is pioneering new ways of living by combining a green city with research labs and development of new, green technologies.



Energy

The Tianjin Eco-city gets its energy from a mix of sources: solar, wind, heat ground-sources, and biomass.



Economy

The Eco-city is near the vibrant Tianjin industrial zone with many foreign manufacturers and hi-technology companies. Within the Eco-city itself, there are creative businesses such as animation studios and green businesses and research and development (R&D) labs working on developing original green technologies.

Planning

The Eco-city is a planned city and is developing in phases. Its development is controlled and includes a provision for business activities and services such as schools.

Smart technology

The Eco-city is hi-tech, uses smart technologies to monitor energy use and offers its residents high-speed Internet. It uses passive technology to exploit daytime sunlight and wind to warm and cool buildings.



Global South Urbanization Does Not Have to Harm Biodiversity

Global urbanization will have significant implications for biodiversity and ecosystems if current trends continue, harming human health and development, according to a new assessment by the United Nations Convention on Biological Diversity (CBD).

Cities and Biodiversity Outlook – the first global analysis of how projected patterns of urban land expansion will affect biodiversity and crucial ecosystems – argues that promoting low-carbon, resource-efficient urban development can counter urbanization's adverse effects on biodiversity while improving quality of life.

"The way our cities are designed, the way people live in them and the policy decisions of local authorities will define, to a large extent, future global sustainability," said **Braulio Dias**, Executive Secretary of the CBD.

"The innovation lies not so much in developing new infrastructural technologies and approaches but to work with what we already have. The results often require fewer economic resources and are more sustainable," he added.

The report says that urban expansion is occurring fast in areas close to biodiversity "hotspots" and coastal zones. And rapidly urbanizing regions, such as large and mid-size settlements in sub-Saharan Africa, India and China, often lack resources to implement sustainable urban planning.

But the study found that cities do not need to be in conflict with plant and animal species and ecosystems. They can, in fact, protect species, as is the case with Belgium, where 50 per cent of the country's floral species are found in Brussels, or Poland, where 65 per cent of the country's bird species are found in Warsaw.

At the **Alexander von Humboldt Research Institute** in Bogota, Colombia, researchers have been thinking about making sure that the growing cities of the future are not ecological disasters.

According to **Juana Marino** and **Maria Angélica Mejía** at the Institute's **Biological Resources Policy Programme**, which investigates "Biodiversity, Ecosystem Services and Urban-Regional Environments", how cities grow and develop must change.

They believe that cities need to take into account the resources that they require to function and the impact that this has on biodiversity and ecosystems.

"The more people who arrive in cities, the more they demand goods and services (in a massive way!): roads, housing, infrastructure, food, water, [creating] an impressive amount of waste, challenging traditional waste management and sanitation policies," said Marino. In short, "Cities enhance consumption."

“The way our cities are designed, the way people live in them and the policy decisions of local authorities will define, to a large extent, future global sustainability”

The Humboldt researchers believe that common patterns can be seen across the global South, where ecosystems "surrounding urban areas are deforested and have significant levels of water and air pollution; they also become deeply transformed by informal settlements."

This process means that cities "lose their ability to be resilient, they become highly vulnerable to global change and they decrease their production of ecosystem services to maintain human well-being in cities."

They argue that human settlements must be sustainably planned for, with ecological resilience and human well-being. If this is not done, areas suitable for agricultural production and biodiversity preservation will be harmed.

And they see innovation as the way to do this. Innovation is critical if cities and urban areas are to avoid widespread destruction of biodiversity as urbanization increases. – (December 2012)

• humboldt.org.co



Use natural habitats in urban areas to create recreational spaces and protect wildlife.



Make green spaces welcoming by providing services such as potable water fountains.



Turning Waste into Wealth

A Southern Innovator's Guide

In researching this issue of the magazine, we identified some common steps that have been factors in the success of waste innovators in the global South.

Making wealth from waste isn't as easy as it first seems and successful innovators have thought about the software of their idea as well as the hardware of the solution.

In this issue's scenario, we have chosen a plastic bag recycling innovator – Waste Not – which is using three methods to recycle or remove waste plastic bags from the local community: turning the plastic bags into fuel, turning them into pellets to sell to manufacturers and using an enzyme to break down the plastic bags in return for payments from the city for cleaning the streets of plastic bags and waste plastic refuse.



Step 1

Making a master plan

Waste is everywhere in modern society. It comes from a wide variety of sources but it tends to be the by-product of industrial and consumer societies. It is a sign that there is a disconnection between the production of a product and its consumption and disposal. Without an alternative, waste will just pile up on streets, in fields, rivers and water bodies or in landfills. Wise innovators see this problem and devise a way to handle this waste that makes them money, too. Looking to go into the waste business? Then ask yourself some hard questions and make a plan.

1. Making a master plan.
2. Designing your brand and logo.

Step 2

Designing your brand and logo

Thinking about your brand and designing how your innovative solution will work from the beginning will greatly improve your chances of success. It does not have to be expensive or complicated: a good idea and a plan costs no more.

Using a brand, a logo and a compelling story about your innovation will set you apart from everyone else and make it easier for people to remember who you are and what you do. Make sure that your actions match your words.

Look at how others working in waste present themselves. Who do you think is successful at getting attention? How would you describe yourself to others or how would others describe you? What are your values? What are your strengths and weaknesses?

2.

Waste^{not}

Waste^{not}

Waste^{not}

typography:

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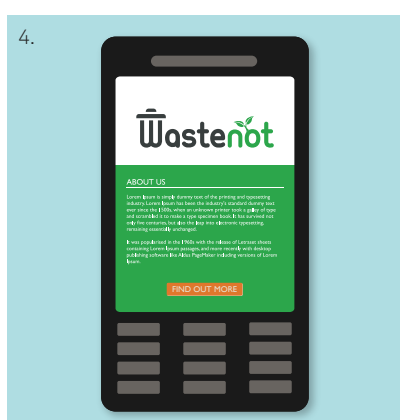




Step 3

Waste Not as a planned business

Waste Not has decided to make use of the wide presence of mobile phones in the neighbourhood. In order to create the incentive to gather and donate plastic bags and waste plastic, people can receive on their mobile phone credits and prizes. The rewards are so good that it could be a full-time job if somebody wanted to do it!



Step 4

Managing the workflow: Getting things done

Managing the deposit banks spread around the neighbourhood in common areas needs a plan. Weekly pick-ups empty the deposit banks and are an opportunity to check on the mechanism to pay mobile phone credits and awards to people. The plastic waste is then taken to a processing centre to be either recycled or destroyed. Every month the plastic pellets are picked up by a seller and the fuel is sold to another vendor.



6. MANAGING WORKFLOW:

Establish a processing centre

Find customers for the processed plastic waste

Set up collection points

Notify people through leaflets and mobile phone text messages

Set up weekly collections from deposit banks

THE MARKETPLACE:

Advertise service to the neighbourhood

Advertise to potential buyers

Monitor quantity of waste plastic collected

Provide incentives to encourage more waste plastic to be collected

3. Set up a collection point for the waste.
4. Develop a mobile phone application.
5. Distribute leaflets to let people know about the service.
6. Develop a flowchart to help to work out the steps to take.
7. Use a laptop computer to manage all the waste collection points.

Step 5

Meeting the neighbourhood

Waste Not started with just one deposit bank but it is now six months later and there are seven spread around the neighbourhood. To keep track of the deposit banks and manage the weekly pick-ups and handle repairs and maintenance, a communications centre has been set up at the innovator's home. The centre has a laptop computer and a mobile phone connected to radio transmitters in the deposit banks that let the centre know when something is wrong or when the deposit bank is full. It looks like "waste not, want not" is still good advice in the 21st century!



Explanation

Turning waste into wealth and learning how to value finite resources by recycling them pose a challenge for the 21st century. Pioneers and innovators are showing how this can be done and that it does not have to be a burden but instead a bounty of riches yet to be discovered. By respecting the planet's resources and by not seeing waste but rather an opportunity to build wealth, human development can be increased without sacrificing the world. As living standards improve and people increase their consumption of products, it becomes critical that those products are produced in a way that does not poison the environment or damage human health.

On these pages, **SI** shows how thinking about the production cycle can radically alter the relationship with resources. By turning away from just using and discarding and also by moving further ahead from the reduce, reuse and recycle approach, it is possible to take another approach – cradle to cradle – that radically demands that people think about designing every product and process so that nothing is wasted and all things always find their way back into the earth as a non-toxic by-product or back into the production cycle to be turned into a new good again.

21st Century Resource Solution

Definition – Cradle to Cradle: Concept

Cradle to cradle seeks to spark a new industrial revolution but this time one that is ecological. By using ecologically intelligent design, the initiators of the concept, William McDonough and Dr. Michael Braungart, believe that human beings can have a positive, restorative, beneficial impact on the environment by turning the making of things into a positive force for society, the economy and the planet. Cradle to cradle is “a systemic approach to product innovation that spurs the creation of truly beautiful, high-quality products, and transforms the production of consumer products into a positive force for society and the environment.” All products can be designed for continuous recovery and reuse as a nutrient for something else. They believe that the best way to tackle resource scarcity is to do better design.

Read on!

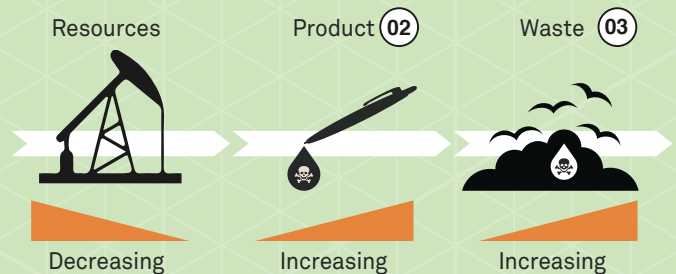
Sources: Cradle to Cradle Products Innovation Institute (c2ccertified.org); Cradle to Cradle: Remaking the Way We Make Things.

FROM TOXIC WASTE TO FOOD FOR THE EARTH

- 01 Every step produces waste in the old cycle of production.
- 02 When the product is finished, it is also waste, often toxic and harmful to the environment.
- 03 Eventually a plastic pen made from oil-based plastic will end up in a landfill where it will become toxic waste.
- 04 The **reduce - reuse - recycle (3Rs)** production cycle is an improvement on the old cycle of production – use and throw away – but it still produces waste, much of which can be toxic.

OLD CYCLE OF PRODUCTION AND WASTE 01

Production and Waste Cycle for a Plastic Pen



REDUCE – REUSE – RECYCLE – (3RS) 04

Life Cycle of a Plastic Pen



05 The DBA 98 Pen (dba-co.com/pen) was developed as the first cradle-to-cradle pen by a company in the United States and is 98 per cent biodegradable. The manufacturing plant where the pen is made is powered by wind energy. Rather than oil-based materials, the pen is made from bio-plastic from sustainable crop resources and has non-toxic ink. It can decompose in a compost facility within 180 days without leaving behind a toxic trace. The pen's nib is the only part that is disposed of as waste.

06 Built using the principles of the cradle-to-cradle production life cycle, the DBA 98 Pen produces just 2 per cent waste when it is discarded at the end of its life cycle.

07 When the DBA 98 Pen has finished its life cycle, rather than just being discarded as waste, it is dismantled and becomes either food for the earth or "food" for another product and the life cycle starts again.

08 Cradle-to-cradle certification establishes a process where producers can gradually evolve their products to use the cradle-to-cradle process and become better designed and free of harmful waste. It is an eco-label administered by the Cradle to Cradle Products Innovation Institute (c2ccertified.org), which assesses a product's safety to humans and the environment and its design for future life cycles.

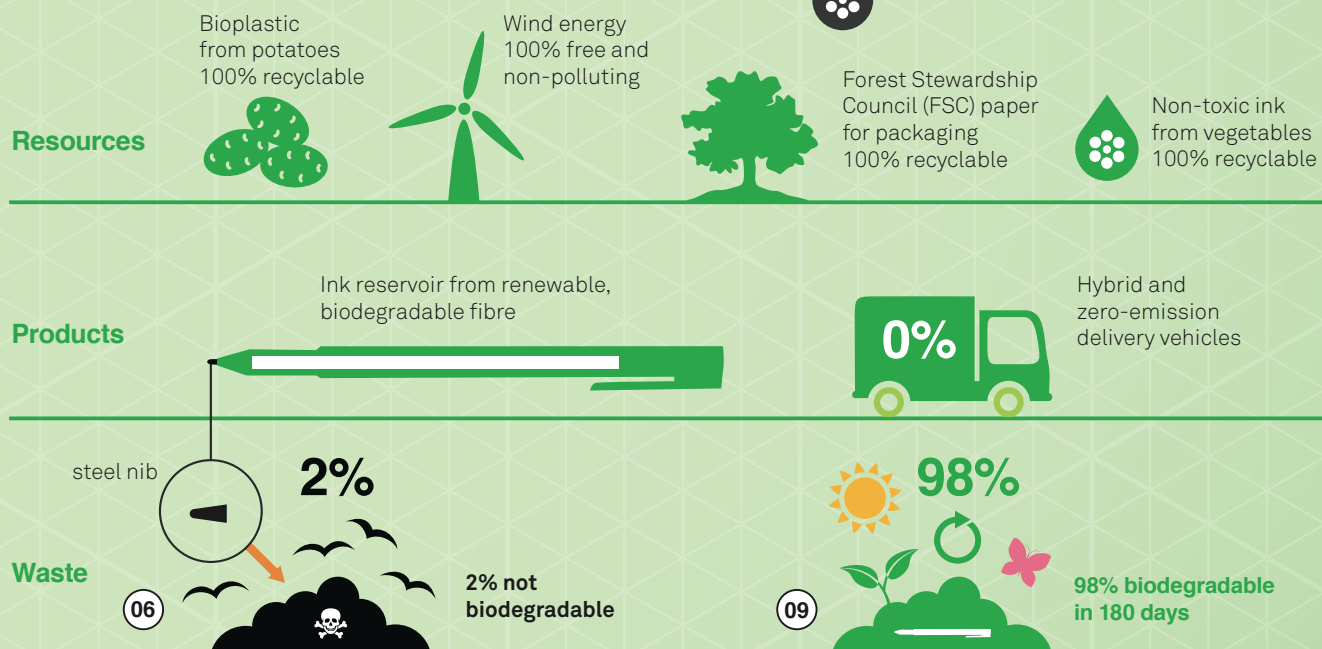
09 The majority of the pen – 98 per cent – can biodegrade in 180 days and does not leave any toxic waste behind when it does get thrown away.

10 The Dipshikha Electrical Skill Improvement (DESI) School in Bangladesh was built using cradle-to-cradle principles. Designed for rural areas of the country by architect Anna Heringer (anna-heringer.com), the idea was to show that it wasn't necessary to import expensive building materials to make a solid structure. Made from earth and bamboo, the school is powered by solar energy, and heating and cooling are done passively, relying on natural air circulation through the building. Natural light is used as much as possible and the building has all the modern facilities expected in a school, including toilets and showers.

CRADLE TO CRADLE – (C2C)

08

The Making of the DBA 98 Pen 07



10

The DESI School in Bangladesh



A sketch of the DESI School.



The completed DESI School.



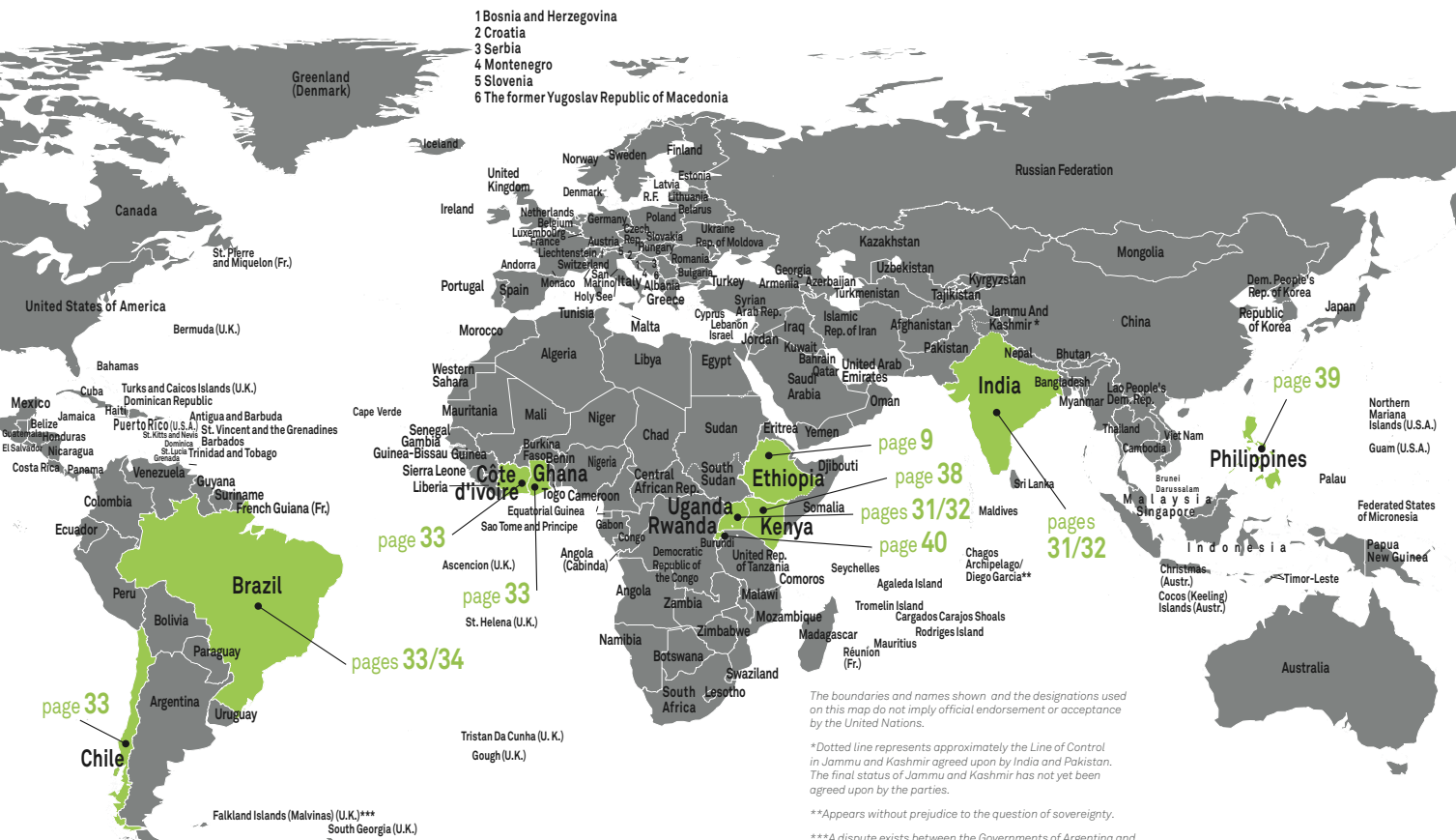
Introduction

While the world has yet to adopt waste-free and non-polluting manufacturing practices on a wide scale, it is possible to ramp up recycling of waste and make a significant difference in how resources are used and re-used. Recycling also helps in cleaning up neighbourhoods and communities, improves quality of life, and creates sustainable, long-term jobs. Where there are people, there will inevitably be waste – and the opportunity to clean it up and use it again.

By turning to recycling for profit and income, innovators can find themselves joining a global market estimated to be worth US\$400 billion (UNEP). The global market for scrap metal and paper alone is worth US\$30 billion (World Bank).

As an example of the possibilities, fashion recycling and so-called “upcycling” – in which waste materials are turned into new materials or better-quality products – is already a major trend around the world. In Great Britain, for example, 2 million tonnes of textiles are thrown away every year, with 24 per cent recycled and 10 per cent upcycled.

Issue 5 of ***Southern Innovator*** features fashion recycling and upcycling pioneers from around the world who are showing how recycling can work and create sustainable incomes. It also includes innovators turning the scourge of plastic bags into useful, everyday items. Others are taking waste cooking oil, which is often just thrown away, and making biofuel. What they all share is the ability to derive an income, and create jobs, from recycling waste.





Indian Entrepreneur Brings Dignity to Poor Women

Driven by the revelation that his wife was torn between spending money on milk for the children and buying commercially manufactured sanitary napkins, Indian innovator and inventor **Arunachalam Muruganantham** embarked on a long and intensive journey to find a solution. His achievement – a simple machine – is bringing dignity to poor women and providing them with a much-needed income source.

Muruganantham has come up with a simple machine to manufacture affordable hygienic sanitary napkins for poor women. It works by turning the pulp of pine wood into the flat, white sanitary pads commonly used by women during their monthly menstruation. The machine's simplicity means that its use can be expanded easily to other communities. The machine also is designed to fit well with the way women's cooperatives work and help them earn an income. – (July 2012)



Image: Kati Farms (katifarms.org)

Ugandan Fish Sausages Transform Female Fortunes

What to do when your food production enterprise is not making much money? It is a common problem in the global South, where farmers and fishers often struggle to survive and where they can face the threat of bankruptcy and destitution while trying to provide essential food for their communities.

Lovin Kobusingya is the former secretary and university graduate who, through tenacity and ingenuity, has built a business selling fish sausages that has become a hit in Kampala, Uganda, in East Africa.

The product, basically unknown in Uganda before, became a tidy solution to the dilemma of how to sell fish at a premium price that could boost the income of the farmers.

The 29-year-old mother of two set up **Kati Fish Farms** (katifarms.org) and **Kati Farm Supplies Ltd.** and now sells 500 kilograms of fish sausage a day. – (November 2012)

Wind energy could provide
9% of the world's
electricity by **2030**
(se4all.org).



Image: Arunachalam Muruganantham.

Quick Facts

- In 2011, estimates placed the number of industrial robots in China at 52,290.
- Three of the biggest metro systems in the world are now in Chinese cities – Beijing, Guangzhou and Shanghai. Beijing has a metro system stretching 442 kilometres and is used every day by 5.97 million people.
- According to *Mass Transit* magazine, China is using domestic consumption and increasing urbanization to spur economic growth and is hoping to increase investment in metro systems in the country by 10 per cent per year. Ten Chinese cities are expecting to receive permission soon to begin work on building new metro systems: Chengdu, Chongqing, Donggu, Hangzhou, Kunming, Ningbo, Tianjin, Tsingdao, Wuxi and Xian.

Sources: International Federation of Robotics and The Economist



Image: Meter Down magazine

Free Magazine Boosts Income for Rickshaw Drivers

In the bustling, congested cities of Asia, rickshaws and auto-rickshaws are common forms of transport. Smaller, cheaper and more nimble than cars, they play a key role in the transit infrastructure, helping to get people to work and to get around.

The monthly magazine **Meter Down** (meterdown.co.in) – launched in 2010 – is targeting the large captive audience of Mumbai's rickshaw passengers with news and advertising. It is modelled on the familiar free newspapers found in cities around the world. – (September 2012)

Q & A

Lucas Belenky, Chief Executive Officer (CEO) of **Top Third Ventures Global**, maker of the **Baker** cookstove (bakerproduct.com), placed design and the production life cycle at the centre of the enterprise since its start in 2011. It manufactures the cookstoves in Nairobi, Kenya.

SI While many initiatives to improve access to energy-efficient products for low-income households are well intentioned, what are some of the common mistakes you see in the products on offer?

I think that some initiatives lose their focus of who their customers are and do not place enough emphasis on design, branding and marketing. It is more common in sub-Saharan Africa for a company or organization pushing their revolutionary product to change their customer (i.e., move operations to another country) instead of changing their product.

SI How can social enterprises create more appealing products for low-income households? What, in your view, needs to change before there will be greater take-up of energy-efficient products?

There needs to be more focus on and dialogue with the customer. Social enterprises often focus more on the interests of grant or donor organizations because there is a lot of grant/donor money available. Removing the free money from the equation and encouraging investment will shift the focus back to business fundamentals, such as paying attention to the customer.

All-in-one Solar Kiosk Business Solution for Africa

Created by a team of German architects, the **Solarkiosk** (solarkiosk.eu) is an autonomous business unit designed for remote, off-grid areas. With solar panels across the top of the kiosk, it generates its own electricity and is basically a mini solar power plant. – (November 2012)



Banning of Plastic Bags and Containers Brings New Opportunities

Uganda banned plastic bags in 2007, outlawing their import, manufacture and use and joining a growing list of African countries seeking to sweep cities of this menace. Uganda's ban followed similar moves in Kenya and in the United Republic of Tanzania, where even plastic drinks containers were banished. Rwanda, also a member of the East African Community, has gone further: in 2005, the country banned any product made of very thin plastic (below 100 microns). The thinner plastic found in plastic bags (under 30 microns) is particularly troublesome because it is easily blown around by the wind. The proliferation of plastic bags and plastic containers across the developing world has not only become an eyesore, but it is also an environmental catastrophe that is poisoning the land.

In Uganda's capital, Kampala, discarded plastic has combined with toxic waste management practices to make the problem worse. While Kampala has 30 companies dealing in solid waste management, the process is mired in corruption. Poor areas of the city receive no service because it is more profitable for the companies to target wealthy areas for the user fees that they collect to remove rubbish.

Scavengers in the municipal dump of Kampala earn 50 Ugandan pence a day collecting plastic bags. Most plastic bags do not make it to the dump, ending up blown around the city by the wind, washed into drains and water courses. Worse, the rich soil around Uganda's towns and villages is now



Trashy Bags (trashybags.org) in Ghana makes fashionable carryalls and handbags from plastic bags.

covered in plastic bags. A new layer of polythene and contaminated soil has formed in many areas, with an impenetrable crust that stops rain from soaking through. It leaves water stagnating in pools gurgling with methane gas bubbles.

For entrepreneurs, tackling the mountains of plastic waste is an opportunity – as is providing a replacement once they are banned. A boon time is emerging for the market in recycled and reusable materials and biodegradable alternatives.



Fashion Recycling: How Southern Designers Are Reusing and Making Money

In Ghana, the cheeky Ghanaian businessman-cum-fashion designer **Kwabena Osei Bonsu** wanted to do something about the ubiquitous plastic bags that pollute the landscape of the capital, Accra.

In Accra, a small city of 2.2 million people, up to 60 tonnes of plastic packaging is dumped on the streets every day, a figure that has risen by 70 per cent over the past decade.

"I wanted to come up with an idea that would solve problems in my lifetime," he said to *The Independent*.

He came up with the brilliantly simple solution of turning this waste and plastic bags back into usable and fashionable carryalls and handbags. He collects the plastic sacks and stitches them together. The business, **Trashy Bags**, employs a dozen



A Trashy Bag worker makes a bag.

tailors and seamstresses. Launched in December last year, it so far has collected 10 million used plastic bags from the streets and sold more than 6,000 bags. Handbags go for US\$7.79.
– (August 2008)

- thewrendesign.com
- modulab.cl
- melissa.com.br
- trashybags.org

Anita Ahuja, president of the NGO **Conserve** in India, has set up a business making fashionable handbags, wallets and shopping bags from recycled plastic bags in New Delhi. Begun in 2003, the project collects plastic bags on the streets and keeps 60 women employed. The recycling process does not require additional dyes or inks and is non-toxic. The bags are sold in London, United Kingdom, and will soon be sold in Italy by the Benetton clothing chain.

“We braided them and tried weaving them, but the plastic would come loose. Then we hit upon the idea of pressing them to make sheets,” Ahuja said.

But this issue can be more complex than it first seems. After South Africa banned plastic bags of less than 30 microns in 2003, many poor entrepreneurs have complained that it hit hard their making of hats, handbags, purses and scrubbing brushes from them.

After the bags are banned, environmentalists say the best option is to use reusable bags made of materials that do not harm the environment during production and do not need to be discarded after use.

Alternatives to plastic bags include traditional African baskets or *kiondos* as they are known in Kenya. Made from sisal and sometimes with leather or wooden handles, the handmade bags support many local women.
– (July 2007)

- theindiashop.co.uk
- conserveindia.org
- propoortourism-kenya.org/african_bags.htm
- eac.int

Creating Green Fashion in China

China is the world's largest manufacturer (Euromonitor) and the largest clothing maker, producing a quarter of all textiles and clothing. It is a global fashion production hub, and many major global clothing brands have their products made there – whether they admit it or not.

Although most people probably do not give it a second thought, the fashion and clothing industries can be highly polluting and exploitive.

According to the **Ethical Fashion Forum**, “it is difficult for companies sourcing from China to be sure of fair working practices. There have been many reports of low wages, long hours, and unfair working conditions in factories in China.”

But one innovative fashion brand is out to transform the way that the garment business works in China and to develop a template that could be used in other places such as Africa.

The design duo of **Hans Martin Galliker** and **Amihan Zemp** has set up their clothing brand's studio in one of Beijing's historic *hutong* (alley) neighbourhoods – narrow streets of low-rise buildings that were the traditional urban dwelling environments for generations of Chinese people. The **NEEMIC** brand, founded in 2011, makes sustainable fashions and champions green production methods in China.

The business belief is that the world has enough fabric already to meet the clothing needs of the population. In response, NEEMIC makes its clothing from a mix of recycled natural materials and new organic materials. According to its website, NEEMIC collaborates “with young designers from London to Tokyo to create a particular metropolitan aesthetic.”
– (December 2012)

- neemic.com
- neemic.asia/organic



A selection of designs by NEEMIC in China.



Recycling Waste to Boost Incomes and Opportunities

Brazil, a world leader in waste recycling and green technologies, has pioneered the recycling of plastic bottles, aluminium, steel cans, solid plastic waste and glass. And now energy companies in Brazil have created credit schemes that encourage waste recycling while giving people real economic benefits in return for doing the right thing for the environment. The first scheme went so well that it quickly inspired others to replicate its programme in other poor communities.

Coelce is a power company in Ceará State in northeastern Brazil. The company is engaged primarily in the distribution of electrical power for industrial, rural, commercial and residential consumption. In 2007, it set up **Ecoelce**, a programme allowing people to recycle waste in return for credits towards their electricity bills. The success of the programme led to an award from the United Nations.

The programme works like this: people bring the waste to a central collection place, a blue and red building with clear and bright branding to make it easy to find. In turn, they receive credits on a blue electronic card – looking like a credit card – carrying a picture of a child and arrows in the familiar international recycling circle.

These credits are then used to calculate the amount of discount that they should receive on their energy bill. The scheme is flexible, and people can also use the credits for food or to pay rent. In 2008, after its first year, the scheme had expanded to 59 communities collecting 4,522 tonnes of recyclable waste and earning 622,000 reais (US\$349,438) in credits for 102,000 people. People were receiving an average of 5 to 6 reais (US\$2.80 to US\$3.37) every month towards their energy bills. A clear success leading to an expansion of the scheme.

Now in Ceará's state capital, Fortaleza – population 3.5 million – there are more than 300,000 people recycling a wide range of materials, from paper, glass, plastics and metals to cooking oil to get electricity discounts, according to the *Financial Times*.



In VietNam, the NGO **Anh Duong** or “Sun Ray” shows schoolchildren how to collect plastic waste to sell for recycling. In return, their schools receive improvements and the students can win scholarships. It is estimated that rural VietNam is littered with 100 million tonnes of waste every year. Much of it is not picked up.

The project is operating in 17 communities in the Long My and Phung Hiep districts in southern VietNam, mobilizing children from primary and secondary schools. School children wearing their uniforms fan out in groups and collect the plastic waste. The money made from selling the plastic waste is being used to improve school facilities and fund scholarships for poor children.

In 2010, the project reported that 10,484 kilograms of plastic waste were collected by 26,015 pupils. This provided for 16 scholarships for school children.

The Anh Duong NGO was set up by a group of social workers with the goal of community development. They target the poorest, bringing together the entire community, and seek out “low cost and sustainable actions”. The NGO has a mix of specialties, from agriculture to aquaculture, health, microfinance and social work. – (November 2011)



South Africa's Wren Design is an online store for chic recycled bags, purses and accessories (thewrendesign.com).



- coelce.com.br/default.aspx
- light.com.br/web/tehome.asp
- anhduonghg.org/en





Global energy demand is forecast to grow by 30 per cent from 2010 to 2035. Sustainably grown biomass could produce four times the world's global electricity needs by 2050. Nearly 40 countries have enough geothermal energy potential to meet a significant proportion of their electricity needs. Wind energy could provide 9 per cent of the world's electricity needs by 2030.

(sustainableenergyforall.org;
World Bank Global Geothermal
Development Plan)



Southern Innovator:

The 5-issue Milestone

The fourth issue of ***Southern Innovator*** (southerninnovator.org) was launched in October 2013 at the Global South-South Development Expo (southsouthexpo.org) held in Nairobi, Kenya at the headquarters of the United Nations Environment Programme (UNEP) (unep.org). The first issue of ***Southern Innovator*** was inspired in part by the many developments taking place in Kenya's mobile phones and information technology space, and it seemed fitting to see the fourth issue, on cities and urbanization, launched in Kenya.



Volunteers (above) help to launch ***Southern Innovator***'s fourth issue at the Global South-South Development Expo in Nairobi, Kenya.

The magazine's journey, from its prototype development in 2010, to its "soft launch" in early 2011, until the first issue's print launch in September 2011, involved extensive research and revision to find the best format for communicating these stories of innovation from the global South. It was a pleasure to receive positive comments from our readers about that first issue and it helped us to continue to refine and improve the magazine over the following issues.

Typography:

Font family: Akkurat (light - regular - bold)

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0123456789 ()!&@; ""

Issue 5 colour palette



Prototype 1.

Design work began in 2010 on ***Southern Innovator***'s first issue.



Prototype 2.



Final design.

Southern Innovator is designed and laid out using 100 per cent renewable energy. It is also printed on paper from sustainable forest sources.

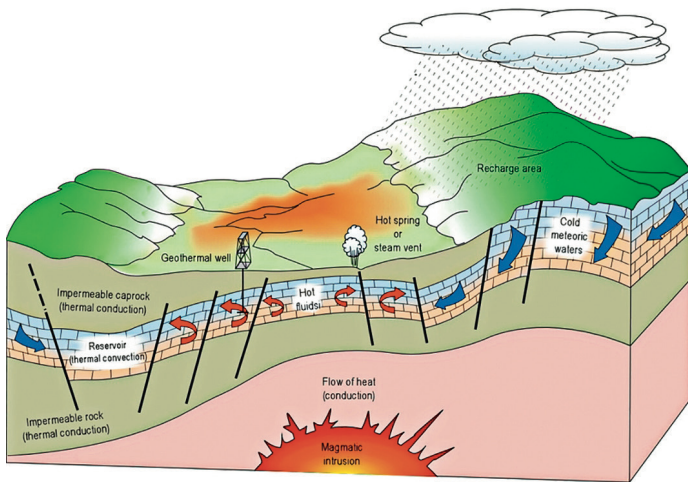
Examples of comments include: "What a tremendous magazine your team has produced! It's a terrific tour de force of what is interesting, cutting edge and relevant in the global mobile/ICT space... Really looking forward to what you produce in issues #2 and #3. This is great, engaging, relevant and topical stuff.", and "Looks great. Congratulations. It's Brilliant Content for the 21st century!"

The magazine has tried to embrace the culture of innovation in its production and development and also be as "green" as possible. For example, all the magazine's design and layout are done using energy derived from renewable energy sources, and the paper on which it is printed is from sustainable forest resources.

On these pages, we show how the initial cover design developed.

We are proud to present the fifth issue and hope that it is a joy to read and useful for your work!





Where geothermal energy comes from.

Kenya Turns to Geothermal Energy for Electricity and Growth

In an effort to diversify its power supply and meet growing electricity demand, Kenya is looking to increase its use of geothermal energy sources. Tapping the abundant heat and steam that lurk underground to drive electric power plants offers a sustainable and long-term source of low-cost energy.

Kenya currently gets most of its electricity from hydroelectric projects. This is great until there is a drought, which there is now. With water resources low, the country has had to turn to fossil fuels to power electricity generators. This means relying on imported diesel, which is both expensive and polluting. It is also not generating enough electricity to keep up with demand.

“ Geothermal generation yields energy that is clean, affordable, reliable and scalable ”

Electricity blackouts have become common in the country and this is harming economic development. This is a particularly damaging setback in a country that has, in the last five years, gained a deserved reputation for its technological advances in mobile phone applications and Internet services – all needing reliable supplies of electricity.

Kenya is Africa's largest geothermal producer and has geothermal resources concentrated near a giant volcanic crater in the Great Rift Valley with 14 fields reaching from Lake Magadi to Lake Turkana. There are also low temperature fields in Homa Hills and Massa Mukwe.

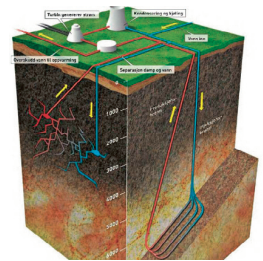
Around 1,400 steam wells will be drilled by companies to meet these goals.

Kenya is currently building a 52-megawatt (MW) geothermal project with funding from the Government of the United States. It is also receiving US\$149 million in funding from the African Development Bank (AfDB) Group to build the **Menengai Geothermal Development Project**. This plant will be able to generate 400 megawatts of renewable electricity from the Menengai geothermal sources in the steam field located 180 kilometres north-west of the capital, Nairobi.

Speaking at a press conference this month, **Gabriel Negatu**, AfDB Regional Director, said that he sees geothermal technology as an important driver of Kenya's green growth ambition.

“Geothermal generation yields energy that is clean, affordable, reliable and scalable,” he said.

The **Geothermal Development Company (GDC)**, a State-owned company in Kenya, recently declared that it had tapped steam with a well in the Menengai steam field. GDC started surface exploration in 2009 and has been using two drilling rigs to look for geothermal steam.



Tapping geothermal energy sources to generate power.

The Menengai Geothermal Development Project is slated to be completed by 2016 and will boost the country's geothermal capability by 20 per cent. It is estimated to be able to power the electricity needs of 500,000 Kenyan households and power the needs of 300,000 small businesses.

It is estimated that Kenya could generate 7,000 megawatts of geothermal power and the Government of Kenya is looking to increase the country's geothermal capacity from the current 198 MW to 1,700 MW by 2020 and 5,530 MW by 2031. – (March 2012)

- gdc.co.ke/index.php?option=com_content&view=article&id=191&Itemid=163
- gdc.co.ke
- nea.is/geothermal



Geothermal Energy to Boost Development of the Global South

The geothermal heat produced by the earth's molten core is a resource receiving more and more attention across the global South. Properly harnessed, geothermal energy offers a low-cost, non-polluting source of power and hot water that does not harm the environment or contribute to climate change.

The country that has made the most of this resource is the Scandinavian island country of Iceland, one of the world's most volcanically active places.

The country was once one of the poorest in Europe, dependent on fishing as its main income source. But by 2007-2008, Iceland was ranked as having the highest level of human development in the world.

One of the contributors to this impressive improvement in human development is the tapping of the country's geothermal energy reserves.

According to the **Geothermal Energy Association (GEA)**, "Iceland is widely considered the success story of the geothermal community. The country of just over 300,000 people is now fully powered by renewable forms of energy, with 17 per cent of electricity and 87 per cent of heating needs provided by geothermal energy."

Worldwide, geothermal energy supplies power to 24 countries, producing enough electricity to meet the needs of 60 million people (GEA).

The Philippines generates 23 per cent of its electricity from geothermal energy and is the world's second-biggest producer behind the United States. Geothermal energy is also helping to provide power in Costa Rica, Guatemala, Indonesia and Mexico.

Energy is critical to advances in human development. Electricity enables the introduction of lighting in homes and the use of washing machines and other modern appliances and communications tools.

And, crucially, it does not harm the natural environment like conventional energy sources such as coal, gas or nuclear power with its legacy of radioactive waste.

While not all countries are as well positioned as volcanically active Iceland or the Philippines, many can find a way to tap this natural resource.

“Iceland is widely considered the success story of the geothermal community”

Interest in this power source is increasing in Central and South America, whose energy consumption is forecast to increase by 72 per cent by 2035 (*International Energy Outlook 2011*).

South America currently relies heavily on hydroelectric power, but this is proving insufficient to meet the growing demand. A World Bank study says that "Latin American and Caribbean countries could boost region-wide electricity supply by 30 per cent by 2030 by diversifying the energy mix to include hydropower, natural gas, and renewable energy" (ESMAP).

The areas best placed to tap this resource are located along the Pacific Rim from Mexico to Chile and in parts of the Caribbean.

The 2012 Geothermal: International Market Overview Report by the Geothermal Energy Association (GEA) found that Argentina, Chile and Peru are moving ahead with plans. – (October 2012)

- visiticeland.com
- geothermal.is
- geo-energy.org/reports.aspx
- earthheat.com.au/
- ecpamericas.org/initiatives/?id=23
- change.to:glencorexstrata.com

Iceland Scene of Major Global Geothermal Scale-up Plan

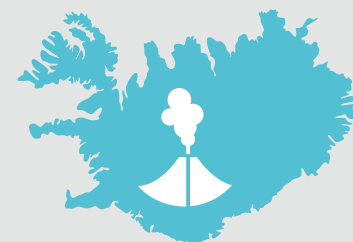
The World Bank announced in March 2013 in Reykjavik, Iceland, a major international effort to expand renewable power generation in developing countries by tapping an underutilized resource: geothermal energy.

World Bank Managing Director Sri Mulyani Indrawati called on donors, multilateral banks, governments and the private sector to join a **Global Geothermal Development Plan (GGDP)** to better manage and reduce risks of exploratory drilling to bring what is now a marginal renewable energy source into the mainstream and deliver power to millions.

"Geothermal energy could be a triple win for developing countries: clean, reliable, locally produced power. And once it is up and running, it is cheap and virtually endless," said **Sri Mulyani Indrawati**.

Sri Mulyani launched the plan at the **Iceland Geothermal Conference** in Reykjavik. Already, the World Bank and Iceland are working together under a "Geothermal Compact" to support surface exploration studies and technical assistance for countries where Africa's Rift Valley is located.

Many developing world regions are rich in geothermal resources, including East Africa, Southeast Asia, Central America, and the Andean region. At least 40 countries have enough geothermal potential to meet a significant proportion of their electricity demand.



Iceland is an island and a European country in the North Atlantic 1,474 kilometres to the West of Norway on the continent of Europe. It has substantial geothermal resources.



Biogas plant under construction at Kitarama prison, Rwanda.

Prisons with a Green Solution

An ingenious solution is helping Rwanda to reduce the cost of running its bursting prisons while improving conditions for the prisoners and helping to protect the environment.

The country's prison population soared to a peak of 120,000 suspects awaiting trial for their role in the 1994 genocide in which 800,000 Tutsis and moderate Hutus were killed. The traditional court system, *gacaca*, is being used for national reconciliation, but the process is slow and costly for a country where 90 per cent of the population exists on subsistence agriculture and where food production has dropped below 70 per cent of the levels needed for self-sufficiency (USAID).

But thanks to enormous, beehive-shaped human manure digesters, a steady supply of biogas is on tap for cooking and lighting at prisons – Rwanda is the first country in Africa to do this. Five of the country's largest prisons – two in Gitarama and one each in Butare, Kigali and Cyangugu – now have biogas plants producing 50 per cent of the gas needed to cook for prisoners. It has also saved half of each prison's US\$44,000-a-year firewood costs.

Biogas is produced from the fermentation of household or agricultural waste or animal or human faeces and has become a viable alternative when traditional gas sources become more expensive. The waste is placed in a 150 cubic metre beehive-shaped

digester and fermented until a gas is produced. According to lead engineer on the project Ainea Kimaro, 100 cubic metres of waste are turned into 50 cubic metres of fuel by bacteria devouring the manure in just four weeks.

The digesters are a project of the **Kigali Institute of Science, Technology and Management's Center for Innovations and Technology Transfer**.

"Biogas kills two birds with one stone," Kimaro told the BBC. It gets rid of all the human waste and covers the costs of feeding so many prisoners.

Many would think that this is a smelly affair, but in fact the whole process isn't that pungent. Most of the digester is underground and the gas produced burns a clean, blue, smokeless flame. It is much cleaner than the smoke from firewood. The remaining sludgy residue is used as an odourless compost for soil. This is used in the prison gardens to grow maize, mangos, bananas and tomatoes. – (February 2008)

• kist.ac.rw/index.php?id=2

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E-newsletter of the Special Unit for South-South Cooperation in UNDP

February 2012

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1. African Afro Beats Leads New Music Wave to Europe

A surge in interest in African music in Britain is creating new economic opportunities for the continent's musicians. The new sound heating up the UK music scene is "Afro Beats" - a high energy hybrid that mixes Western rap influences with Ghanaian and Nigerian popular music.

Afro Beats draws its inspiration from the "Afrobeats" sound popularized in the 1970s (<http://en.wikipedia.org/wiki/Afrobeats>). Afrobeat recordings from that time are still making money as long forgotten tunes are re-packaged by so-called "crate divers" - enterprising people who rummage through old vinyl record collections and re-brand scenes and sounds.

This is part of the global creative economy, which is thriving despite the recent years of economic turmoil. Musicians offer many lessons for businesses in the South, both in their adaptability to new conditions and their resourcefulness in experimenting with new business models to earn an income.

Afrobeat stars and pioneers like Nigeria's Fela Kuti (http://en.wikipedia.org/wiki/Fela_Kuti) have been popular outside Africa for many decades. But Afro Beats - a new name with the addition of the crucial letter "s" - is being declared as the beginning of a new phase in taking African music global.

As the digital music revolution has rocked the global music business, artists have had to adapt and change their business models. For all but a very few "big names," it is no longer possible to build a career on royalties from recordings and hits. Stars and novices alike must battle with music pirates, who sell CDs and downloads of other people's tunes and keep the money for themselves. Legitimate income often comes in micropayments from large music platforms like iTunes as people pay to download an individual song or mix and match tunes they like from an artist's catalogue, rather than buying a whole album as they would in the past.

Clever musicians have turned to building their brand, using live performances and the ability to sell other services and merchandise to make a living. They create their own web platforms, or mobile phone apps (applications), and do the marketing and distribution on their own to build a loyal fan base. Others are creating their own mobile radio stations by distributing CDs to the ubiquitous taxi mini buses that are the main means of transport in most African cities.

But some things remain the same as in the past, such as the importance of having a champion, such as a radio DJ (disc jockey), who acts as a "taste maker," discovering new acts and telling their audience about them.

The DJ most associated with pushing the Afro Beats sound and scene is London-based DJ Abantee (<http://www.facebook.com/diabantee>).

www.southerninnovator.org

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SouthernInnovator
Mobile Phones & Information Technology Issue
February 2012

Development Challenges, South-South Solutions

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African Fuel Pioneer Uses Crisis to Innovate

Crisis, as the old saying goes, is also a window of opportunity. And there is one African entrepreneur who knows this better than most. Daniel Mugenga has been on a journey of innovation that has led him to become a pioneer in the emerging new field of algae technologies. The story of how he got there is a testament to the power of using business to both solve problems and make profits.

Kenyan entrepreneur **Daniel Mugenga** has found a solution to the problem of high fuel costs for the transport sector in his country. He has been making money from turning waste cooking oil and inedible vegetable oil into biodiesel. He then discovered that he could boost his production of biodiesel by using marine algae as a source for oil.

“ **Pure Fuels makes a bold statement on algae fuel development: it “may actually be Kenya’s next cash crop”** ”

According to the body that represents the algae fuel industry, Oilgae, algae are “plant-like organisms that are usually photosynthetic and aquatic, but do not have true roots, stems, leaves, vascular tissue and have simple reproductive structures. They are distributed worldwide in the sea, in freshwater and in wastewater. Most are microscopic, but some are quite large, e.g., some marine seaweeds that can exceed 50 m in length.”

His business, **Pure Fuels Ltd.**, is currently seeking venture capital funding for expansion and innovation. Pure Fuels is “a commercial producer of biodiesel and also manufactures biodiesel processors, which we sell to budding entrepreneurs,” says Mugenga.

The Pure Fuels website educates readers on biodiesel as well as offering opportunities for investors and news updates. Pure Fuels was registered as a business in Kenya in 2010.

The business was born out of crisis: in 2008, there were frequent fuel shortages in Kenya and prices were volatile. That was bad news for Daniel Mugenga’s job, working for a transport company with a fleet of trucks. Rising or volatile fuel prices can destroy businesses in areas such as trucking, where the biggest expense is fuel.

Mugenga began to do research into fuel alternatives in the crisis and came upon biodiesel. He then set about training in how to produce biodiesel. A period of testing, trials and research ensued between 2008 and 2010, which enabled Pure Fuels to build confidence that it had something that was high quality. The company started producing 120,000 litres of biodiesel in 2010 and increased production to



100% Biodiesel

360,000 litres in 2011 and 700,000 to date in 2012. In 2011, Pure Fuels had revenue of US\$230,000 from selling biodiesel.

“We started off using jatropha oil, but when its price went up, it was no longer profitable,” Mugenga told the **VC4Africa** website blog. “Having invested in the machinery, we switched to the next quickest alternative, which is used cooking oil. We source it from several of the tourist hotels along the Kenyan coast.”

Turning to cooking oil for biodiesel at first was a good idea. The company was able to obtain enough waste cooking oil from Kenyan hotels and tourist resorts to meet demand. But as demand rose, the thorny problem of Kenya’s tourism business being seasonal arose.

“For about five months of the year, many hotels in Mombasa temporarily shut down or operate at lower capacity. Of course, this is affecting the amount of waste cooking oil,” Mugenga said. This is where algae come in.

Pure Fuels found a biotechnologist in Kenya to help to develop a solution using algae as a source for fuel. While the company is keeping details of its innovation secret, it is currently hunting for investors to help to increase the quantity of biodiesel that it can make – and, in turn, revenues.

Investor funds would be used to import non-edible vegetable oil and to continue the company’s work on extracting oil from marine algae.

Pure Fuels makes a bold statement on algae fuel development: it “may actually be Kenya’s next cash crop.”

– (July 2012)

- oilgae.com
- purefuels.co.ke
- kebs.org
- seambiotic.com
- cgdc.com.cn
- univervebiofuel.com



Indonesian Wooden Radio Succeeds with Good Design

One Indonesian industrial designer has pioneered an innovative business that has rejuvenated the economy of a farming village and improved the sustainability of local forests – and he's doing it all with wood.

A range of wooden radios hold pride of place for the **Magno** brand, which has carved out a niche as a maker of high-quality, crafted products that marry traditional skills with modern design. Magno is creating jobs and skills while also creating a unique, exportable product that commands a good price.

Indonesian designer **Singgih Susilo Kartono** developed the radio design concepts while at the Faculty of Fine Art and Design in Bandung, Java, Indonesia, in the 1990s.

He takes an organic approach to designing, enjoying the journey and not necessarily being sure where he is going.

"I never start my design according to the market research or demand. I design by absorbing events, global or local events and even mundane daily life things that happen around me. Consequently, I start to think what will be good and better for these people," he explains in his brochure.

The workshop in which the radios are made is a handsome wooden-roofed building and craftspeople sit at long wooden tables to assemble the models.

Each radio is made from a single piece of wood and takes a crafts-person 16 hours to construct, drawing on traditional woodworking skills. The radios are made from Indian rosewood, which is often used to manufacture many musical instruments because of its excellent sound resonance.

The radios are made in stages, with more than 20 steps involved in assembling each one. The individual parts are precision cut by machines before being assembled using a tongue-and-groove construction technique.

Some radio models have a chunky, retro appearance and mix dark and light wood to give an eye-pleasing contrast. Others are more modern designs with a sleek profile. There is a large version, a "Mini", a sleek modern "Cube" version and a rectangular version. There is also a round clock and a wooden desktop office set with various essentials such as a wooden stapler.

The radios sell for between 99 euros (US\$124) and 220 euros (US\$276), and are shipped to Europe via Singapore to Hamburg in Germany.



Magno wooden radio with chunky, retro buttons.

"To me, wood is somewhat a perfect material, especially if I compare it to synthetic ones," Kartono said. "In wood, we could find strength and weakness, advantages and disadvantages or roughness and also softness. Wood is hard and solid but yet it is 100 per cent eco-friendly as it is degradable and leaves no waste materials on the earth."

Great care is taken in selecting the wood and ensuring that it is from local, sustainable plantation sources. According to its website, Magno used 80 trees in 2010 for its radios but in turn planted 8,000 trees around the village. This regeneration has become part of the process of creating the radios.

Magno has won numerous awards, including the Brit Design Award (United Kingdom), Design Plus Award (Germany), Good Design Award/G-Mark (Japan) and the Indonesia Good Design Selection Awards.

"The wood I use for the manufacturing process may need as long as 50 years to reach maturity," Kartono said. "I want people not only to think about exotic or precious woods but likewise about the fact that good things require time. All objects that surround us should be thought-provoking. Craftsmanship originally was the art of dealing with raw materials in a sensible and economical way."

Kartono was inspired by one of his teachers at university, an advocate of the "new craft"



approach, which applies modern management techniques to traditional craftsmanship. The idea is simple but very effective. It begins with making sure that every step of the manufacturing process is standardized to ensure consistent quality and materials. A new product or design is first broken down into steps and a product manual is put together. Only then is the manufacturing process carried out.

While the “new craft” method sounds simple and obvious, many craft makers do not take this approach. By following this methodology, it is possible to quickly train new craft workers and start up manufacturing in a new village or community. Craft is increasingly being seen as a good way to re-employ people who formerly worked in farming. The “new craft” approach can create high-quality products that would sell well in the export market. A common problem with crafts is either poor quality control or inconsistent manufacturing methods. This can feed stereotypes of craft products and make them look second-rate in comparison to machine-manufactured products in the marketplace.

“Design for us is more than just creating a well-designed product that is produced and consumed in colossal amounts,” Kartono said. “Design must be a way to solve and minimize problems.”
– (June 2012)

- wooden-radio.com
- magno-design.com/?id=wr01a

Magno wooden product range, including clock.







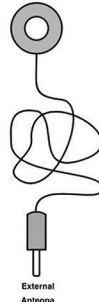
Table Wooden Radio


The idea is to drag radio closer to our personal range. Meanwhile, regarding electronic advancement, the tendency is towards the compactness and miniaturization of the radio. This will give an opportunity to re-interpret the product form from a human-machine interface issue to a human-cultural icons relation. Looking at the radio as the sound box/entertaining mate, we have transformed the idea into the essential form of radio with more changes to experiencing it as a personal man-made thing. Part of the idea is to bring closer and more personal treatment to the user. Natural materials are also meant to give the rightness of sense toward nature.

Wood needs a special handling and treatment. This wooden radio using oil finishing technique, that is why better be saved on the dry space. For caring, just brushed the material with soft brush. And then wipe it with dry cloth. Don't forget to put on a drop of teak or pine oil on it. This product will be glowing over and over, if you were treated lovingly.

User's Manual

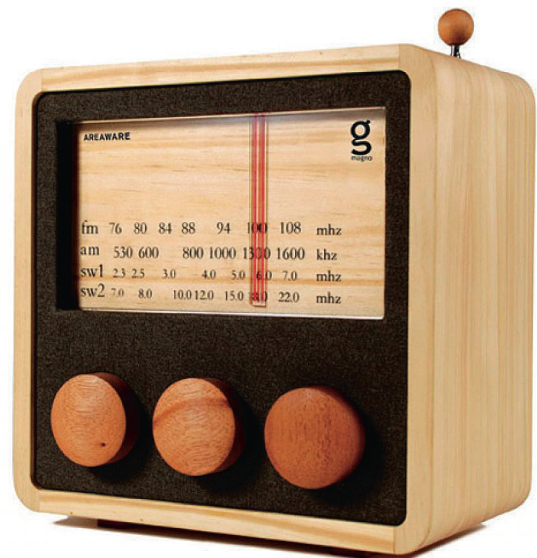
WR03-CUBE/4B

A. Volume-ON/OFF Button
B. Band Selector
 turn right to left:
 1.FM 2.AM 3.SW1 4.SW2
C. Frequency Button
D. Battery Case :
 pull down the black string,
 open the batteries
 case with your finger.
 Battery : 4 x AA size 1.5 V
 remove battery
 when not use
 in long period.
E. External antenna port
F. Music port for music player
G. DC in 6V 

Crafted by Piranti Works, Temanggung - Indonesia © 2006 Singih S. Kartono. 'magno' is a mark of Piranti Works. All rights reserved.
www.magno-design.com

Magno Radio user manual.



Powerful Solar Light Spurring Income-making Opportunities

A clever innovator from India has built a highly durable solar lantern that also doubles as a mobile phone charger.

The **Sunlite** lantern – the JS30 MOB Sunlite – made by **Sunlite Solar** is an LED light packed with clever innovations. It is completely self-contained and does not require any extra parts, cables or separate solar panel to charge it. The clever design includes a pop-up, fold-down handle, a powerful solar photovoltaic (PV) panel on its top that – with a day out in the sun – charges the lantern battery enough to provide around 8 hours of 360-degree light when the sun goes down. It is also highly durable and moisture- and heat-resistant and can withstand a drop on a hard floor.

The manufacturer of the Sunlite lantern is **India Impex**, which focuses on making and exporting high-quality off-grid solar lighting products and sees itself as a “socially driven company.” Founded in 2009, it has built up its reputation as a global vendor to humanitarian and relief agencies.

“For the size of the lamp, for the number of hours, for the features we give, including the mobile [phone] charging, we are 100 per cent portable; it is all integrated,” said Sunlite representative **Divyesh Thakkar**, while demonstrating the lantern at the 2012 Global South-South Development Expo, held recently in Vienna, Austria.

The mobile phone charging capability has been seized as a great way to turn the lantern into an income-generating opportunity. Already, people are forming co-ops and charging rent time on the lantern for recharging mobile phones. And there are a few clever tweaks to the lantern to help control this.

“I don’t want this to be abused; I want it to be smart,” said Thakkar. “When someone comes in and charges the mobile phone and forgets, it is going to cut off after 20 minutes.”

Sunlite lanterns have many uses, according to the product’s maker. One aspect that the manufacturer is emphasizing is the importance of light to the security of women and children. There is overwhelming evidence that better lighting makes for a more secure environment and allows people to do more things safely at night. Children can look out for environmental threats such as poisonous snakes and spiders, and women and girls can feel safe doing things such as going to the toilet without worrying that somebody might attack them in the dark.

Solar power is being seen as a way to get electricity to people in areas bypassed by conventional electricity grid networks. It



The Sunlite Solar light with handy carrying handle and solar panel on top for recharging.



also helps to move people away from expensive, polluting and dangerous alternatives such as diesel generators, paraffin lamps, gas stoves and coal or dung fires.

“We compare our solar lantern to the kerosene lantern,” Sunlite representative Sagar Mehta explained. “On a payback basis, you use an approximate of 30 to 40 cents of a US dollar of kerosene every day for a four-hour light. First of all, it is very harmful: smoke inhalation, illnesses, burns, all sorts of things, security issues.

“That will cost a family one third or half of its income on a daily basis. If we can change this around where, if we can make a solar lantern, where the sun is free, that can pay back in three months and you start earning rather than paying, [they are] making a living.”

Sunlite lanterns are currently being distributed to people in disaster situations and also in refugee camps and displaced persons communities. – (December 2012)

- sunlite-solar.com
- southsouthexpo.org



SouthernInnovator	Issue 05	2014	Waste & Recycling	UNITED NATIONS DEVELOPMENT PROGRAMME
SouthernInnovator	Issue 04	2013	Cities & Urbanization	UNITED NATIONS DEVELOPMENT PROGRAMME
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SouthernInnovator	Issue 01	May 2011	Mobile Phones & Information Technology	UNITED NATIONS DEVELOPMENT PROGRAMME

Forward with Southern Innovator magazine.

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southerninnovator.org

Baker Cookstoves:

Designing for the African Customer

An innovative social enterprise is using design to create an energy-efficient cookstove for Kenya. The **Baker** cookstove has been designed in order to be a high-quality and desirable product that also accomplishes the goal of saving money for the user. This unique product is being developed at the company's factory in Nairobi, Kenya.

Baker's owner is **Top Third Ventures Global**, a social impact company registered in Kenya. It was founded by **Lucas Belenky** and **Björn Hammar** in 2011.

While cooking is a daily necessity for billions of people, it is also costly and polluting. By switching to energy-efficient cookstoves, families will be able to reduce the cost of cooking daily meals and, if the stove is designed right, reduce the amount of pollution generated while cooking. One of the great obstacles holding back the take-up of energy-efficient cookstoves has been the absence of sustainable business models to sell and distribute energy-efficient cookstoves.

The Baker cookstove, by being designed as an aspirational product and backed up with a seven-year guarantee, hopes to change this dynamic. And if things go to plan, then Baker hopes to significantly scale up its production based on customers wanting to have a Baker cookstove taking pride of place in their home.



Björn Hammar inspects the Baker cookstove being built in the Nairobi factory.

The Baker cookstove is the product of a deliberate attempt to use design and a well-thought-out production life cycle to ensure that the cookstove is eye-catching, effective, and manufactured consistently and to a high standard. Engineering and design teams also constantly monitor the product and make adjustments to the cookstove as they receive feedback from customers.



The Baker cookstove is benefiting from new financing being made available through carbon credits and Baker's founders believe that this will add sustainability to the energy-efficient cookstove market and bring big changes over the next 10 years.

Interview

Baker's Chief Executive Officer (CEO), Lucas Belenky, explained to ***Southern Innovator*** the thinking behind the Baker cookstove.

SI: What role does design play in the Baker cookstove social enterprise? At what stage did Top Third Ventures start to think through the production life cycle for the Baker cookstove? What did you feel was missing in the other cookstove models currently available on the market?

The Baker cookstove is the cornerstone of the social enterprise. Top Third Ventures is at its core a product company. There are different aspects to the business model to make it work (i.e., carbon credits and big data) but everything depends on the success of the Baker product. We started thinking through the production life cycle from the day the company was founded in late 2011. The Baker is designed for usability, aspirational value and performance, prioritized in that order. The most important thing is that the Baker is easy to use and does not require its users to change their daily routines or



cooking habits. Cooking cultures vary greatly across the developing world so it is important to understand exactly who your customers are and focus on meeting their requirements. When you have a product that is easy to use, it needs to be desirable as well. Beyond the service provided, the product should make the customers feel good about themselves. Finally, the Baker cooks the same food with half the fuel and much less smoke.

The priorities seem reversed for other cookstove models on the market. Efficiency comes first, then the aesthetic design, and cultural conformity is last. Hyper-efficient cookstoves are great for health and the environment on paper but the benefits are not realized because widespread adoption isn't achieved. Most products are imposed through a top-down approach instead of starting with the customers and designing the stove around them.

SI: Why did you choose to have the Baker cookstove designed by **Claesson Koivisto Rune**? What were some of the challenges encountered when designing the product and the production life cycle? What advice do you have for other social enterprises looking to offer an appealing product to low-income households?

We wanted the Baker cookstove to be an aspirational product that you use as much because of the performance (less fuel and less smoke) as because it is beautiful. Claesson Koivisto Rune believed in our vision at a very early

stage and I doubt we could have gotten where we are today without them. Challenges around the design mainly involve keeping the costs down. Our customers do not have a lot of disposable income so balancing affordability with performance and world-class design is tough.

For other entrepreneurs selling to low-income households, my advice is: identify your customer, listen to them, and never stop listening. This is obvious to most businesses but for social enterprises, sometimes the grant organizations or other dispersers of donor funding become the customer without your noticing.

Finally, often just because the consumer is in a developing country, enterprises neglect aesthetic appeal and branding. Do not do this. Your consumers behave for the most part like their counterparts in the developed world. They want products that look nice and make them feel good.

SI: What role is information technology playing in the Baker cookstove's development? How do mobile phones help with reaching customers in Africa? How does offering software products such as Top3Tracker help Baker cookstoves?

Information technology has a huge impact in decentralized areas because it enables the cheap flow of information. For Top Third Ventures, it allows us to track our sales in real-time, communicate with current and



Lucas Belenky with a Baker cookstove painted a distinctive orange.



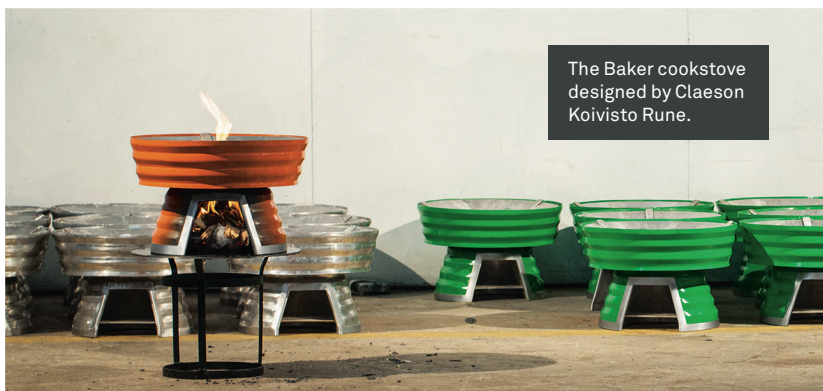
future customers instantly and gain valuable insights about how to improve the sales pitch and marketing strategy. The Baker cookstove also depends on carbon finance, which requires a dialogue with current customers to ensure the usage of the cookstove is accurately measured. Information technology such as our Top3 Tracker significantly reduces the cost of accessing carbon finance.

SI: It is said that an innovator is somebody who disrupts existing products and ways of doing things. How is Top Third Ventures innovating and disrupting the current approach to energy-efficient cookstove distribution?

We hope to change the way products for low-income households are designed, marketed and sold. Top Third Ventures' Baker cookstove embodies our conviction that these products should be customer-centric, have aspirational value and conform to local cultures. The success of our product will show that consumers in the developing world want the same thing as their counterparts in developed countries.

Top Third is a partner of the Global Alliance for Clean Cookstoves.

- bakerproduct.com
- topthirdventures.com
- cleancookstoves.org











Innovations Summary

Southern Innovator has profiled many innovations since 2011. Here is a summary of those innovations and how to find them in **SI's** back issues.



		2011	2012	2013
<p>Powerful information tools + data for farmers</p>		<p>21st century “smart farms” are now possible</p>		
<p>Page 9</p> <p>Issue 3</p> 		<p>Pages 28-29</p> <p>Issue 3</p> 		
<p>Natural ways to keep soil healthy</p>		<p>New food products create new markets</p>		
<p>Page 20</p> <p>Issue 3</p> 		<p>Page 21</p> <p>Issue 3</p> 		
<p>Innovative ways to sell food</p>		<p>Clear branding + new products boost farmer income</p>		
<p>Issue 3 – Pages 12-16</p> 		<p>Issue 3 – Page 34</p> 		
<p>Innovative products for new markets</p>		<p>Innovative ways to stop food waste</p>		



Innovations Summary

Do you have an innovation that you would like to share with the global South?

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Energy-efficient homes save money

Debt-free homes for the poor



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Issue 4



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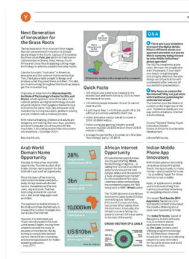
Smart cities use data to work

Eco-cities go green to work



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Cambodian bloggers champion freedom

Fab Labs innovate for development



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Issue 1



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Issue 1



Frugal mobile phone charger

Illiterate get Internet at touch of button

Southern Innovator KNOWLEDGE SUMMARY

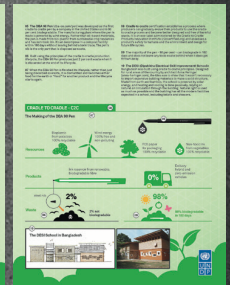
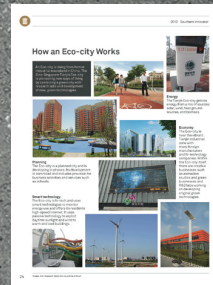
Issue 5 of **Southern Innovator** joins a growing stable of off- and online resources capturing unique knowledge on Southern innovation.

5 E-newsletter

Published every month since 2006, the *Development Challenges, South-South Solutions* e-newsletter has chronicled the many changes in the global South from the rise of mobile phones to the move to cities and urban areas to the proliferation of innovative solutions.

Waste

1



4

The **Southern Innovator website archive** presents by theme the back catalogue of stories from the *Development Challenges, South-South Solutions* e-newsletter. It also joins an extensive range of resources offered on the web portal of the United Nations Office for South-South Cooperation (ssc.unodp.org).

2

Recycling



3

Southern Innovator Issue 4

Southern Innovator's fourth issue was on the theme of cities and urbanization. It was launched in October in Nairobi, Kenya, at the Global South-South Development Expo.



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MONEY, MONEY: Where to Get It

AWARDS

Innovation Prize for Africa: The Innovation Prize for Africa, begun in 2011, awards US\$100,000 for the top innovation that matches its criteria of marketability, originality, scalability, social impact and business potential.

Website: innovationprizeforafrica.org

Saïd Global Entrepreneur Challenge: SGEC is a global business-plan challenge hosted by the University of Oxford's Saïd Business School. It is more than just a competition; based on the quality of an initial one-page business plan, applicants will receive mentorship and guidance from the University of Oxford's business students and alumni to help to grow the ideas into practical, 10-page business plans.

Website: www.sbs.ox.ac.uk

InnoCentive: InnoCentive is a challenge to the world's inventors to find solutions to real scientific and technological problems affecting the poor and vulnerable. It is an open marketplace where anybody with a problem can post it, and rewards for effective solutions stretch up to US\$100,000. It uses rigorous intellectual property protection so that ideas are not used without credit being given to the inventor.

Website: innocentive.com

Grand Challenges Canada: A grand challenge is a specific critical barrier that, if removed, would help to solve an important health problem in the developing world, with a high likelihood of global impact through widespread implementation. Grand Challenges Canada awards funding to innovative solutions to five challenges.

Website: grandchallenges.ca

The Pioneers of Prosperity Grant and Award: This competition is a partnership between the OTF Group and the John F. Templeton Foundation of the United States. It promotes companies in East Africa by identifying local role models that act as examples of sustainable businesses in their country/region. It is open to businesses from Burundi, Kenya, Rwanda, the United Republic of Tanzania and Uganda. Five pioneers will receive US\$50,000 to reinvest in their businesses. It is open to for-profit businesses that provide high wages to their workers and that operate in sustainable ways.

Website: pioneersofprosperity.org/index.php

BUSINESS SUPPORT

West Africa Trade Hub: The Hub works with people to improve transport, access to finance, the business environment and ICT to make West African businesses more competitive.

Website: watradehub.com

ExportHelp: Promoting and supporting access to the European market: The European Commission runs a database for the explicit support of market players in developing countries who want to bring their products to the European Union market. The database gives an overview of the European Union preferential trade regimes established for developing countries and lists all tariffs, taxes and other requirements for goods imported into the European Union.

Website: exporthelp.europa.eu

African Diaspora Skills Database: This database was compiled to provide an overview of qualified African diaspora professionals with varied areas of

expertise and experience. The African diaspora contributes substantially to the social, economic and political development of Africa, and this database is set up to further mobilize this considerable potential.

Website: diaspora-centre.org

Development Executive Group:

Over 90,000 global experts can network and connect and learn about more than 47,000 registered projects.

Website: devex.com

African Economic Outlook: A unique online tool that puts rigorous economic data, information and research on Africa at your fingertips. A few clicks give access to comprehensive analyses of African economies, placed in their social and political contexts. This is the only place where African countries are examined using a common analytical framework, enabling users to compare economic prospects at the regional, subregional and country levels.

Website: africaneconomicoutlook.org/en

GRANTS

Google.org: While small and medium-sized enterprises (SMEs) in rich countries represent half of GDP, they are largely absent from the formal economies of developing countries. Today, there are trillions of investment dollars chasing returns, and SMEs are a potentially high-impact, high-return investment. However, only a trickle of this capital currently reaches SMEs in developing countries. Google.org's goal is to increase this flow. It wants to show that SMEs can be profitable investments and do this by focusing on lowering transaction costs, deepening capital markets to increase liquidity and catalysing capital for investment.

Website: google.org

Echoing Green: Social Entrepreneurs Fund: To accelerate social change, Echoing Green invests in and supports outstanding emerging social entrepreneurs to launch new organizations that deliver bold, high-impact solutions. Through a two-year fellowship programme, it helps its network of visionaries to develop new solutions to society's most difficult problems. To date, Echoing Green has invested nearly US\$30 million in seed funding to almost 500 social entrepreneurs and their innovative organizations.

Website: echoinggreen.org

Bill & Melinda Gates Foundation: Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. In developing countries, it focuses on improving people's health and giving people the chance to lift themselves out of hunger and extreme poverty. The Foundation disburses grants to people in more than 100 countries.

Website: gatesfoundation.org

Skoll Foundation: Skoll is one of the leading foundations in the field of social entrepreneurship. Over the past 10 years, it has awarded more than US\$250 million, including investments in 85 social entrepreneurs and 70 organizations on five continents around the world who are creating a brighter future for underserved communities. In addition to grant-making, it funds a US\$20 million-plus portfolio of programme-related and mission-aligned investments.

Website: skollfoundation.org

Rockefeller Foundation: The Rockefeller Foundation supports work that expands opportunity and strengthens resilience to social, economic, health and environmental challenges to promote the wellbeing of humanity.

Website: rockefellerfoundation.org

Landesa: Landesa helps millions of families to receive assistance in gaining legal control over their land. Landesa works mainly in China and India and sub-Saharan Africa. Land rights are a great spur to wealth creation and give families a stake in growing local economies.

Website: landesa.org

Ashoka: Innovators for the Public: Ashoka is the largest network of social entrepreneurs worldwide, with nearly 3,000 Ashoka Fellows in 70 countries putting their system-changing ideas into practice on a global scale.

Website: ashoka.org

INVESTMENT FUNDS

African Agricultural Land Fund: The Fund has raised almost €2 billion from an American pension fund to invest in African agriculture. The African Agricultural Land Fund, created by the United Kingdom-based hedge fund, Emergent Asset Management, wants to raise a total of €3 billion and is canvassing a range of investors. It plans to invest in agricultural land and livestock, including African game, which will be sold to private reserves and safari parks. The Fund also plans to develop biofuel crops on marginal land, saving prime agricultural acreage for crops to feed people.

Website: emergentasset.com

Aureos Africa Fund: Small and medium-sized enterprises across Africa are set to benefit from a multimillion-dollar investment fund set up by private equity firm Aureos Capital with the Commonwealth Secretariat's assistance. The Aureos Africa Fund will provide long-term capital and support for promising and successful businesses across the continent.

Website: aureos.com

MICRO-LENDERS

Kiva: A non-profit organization with a mission to connect people through lending to alleviate poverty. Leveraging the Internet and a worldwide network of microfinance institutions, Kiva lets individuals lend as little as US\$25 to help to create opportunity around the world.

Website: kiva.org

United Prosperity: People can select the entrepreneur to support. Each US\$1 contributed acts as collateral or a loan guarantee with a bank. Based on the guarantee, the bank makes a loan of nearly US\$2 to the entrepreneur through a partner microfinance institution (MFI). Once a guarantee has been made, the entrepreneur's progress can be tracked online. On loan repayment, you receive your money and can choose to recycle it by guaranteeing the loan to another entrepreneur.

Website: Unitedprosperity.org

Grameen Foundation: Grameen Foundation helps the world's poorest, especially women, improve their lives and escape from poverty by providing them with access to loans, essential information and viable business opportunities. Through two of the most effective tools known – small loans and the mobile phone – they work to make a real difference in the lives of those who have been left behind; poor people, especially those living on less than US\$1.25 per day.

Website: grameenfoundation.org

SOCIAL FUNDING AND PATIENT CAPITAL

Acumen Fund: Its mission is to create a world beyond poverty by investing in social enterprises, emerging leaders and breakthrough ideas.

Website: acumenfund.org

Omidyar Network: A philanthropic investment firm, it creates opportunities to improve lives by

investing in market-based efforts that catalyse economic, social and political change.
Website: Omidyar.com

Ashoka: Innovators for the Public: Ashoka provides a wide range of services and funding for social entrepreneurs and now has over 2,000 Fellows in over 60 countries on five continents.
Website: ashoka.org

Africa Entrepreneurship Platform: This groundbreaking initiative is created as a forum to showcase innovative ideas and businesses from Africa that have the ability to scale up internationally, driving job creation and sustainable economic development between Africa and the Americas.
Website: sacca.biz

TOOLKITS AND BUSINESS ADVICE

SME Toolkit Kenya.
Website: kenya.smetoolkit.org/kenya/en

HSBC Knowledge Centre: News and know-how for your business.
Website: knowledge.hsbc.co.uk

HSBC Business TV website.
Website: businessstv.hsbc.co.uk

SME Toolkit: Build Your Business.
Website: smetoolkit.org/smetoolkit/en

Branding Strategy Insider: Small businesses looking to develop their brand can find plenty of free advice and resources here.
Website: brandingstrategyinsider.com

Brandchannel: The world's only online exchange about branding, packed with resources, debates and contacts to help businesses to intelligently build their brand.
Website: brandchannel.com

Just Food: A web portal full of the latest news on the global food industry and packed with events and special briefings to fill entrepreneurs in on the difficult issues and constantly shifting market demands.
Website: just-food.com

Dutch Design in Development: DDiD will help Southern entrepreneurs and small enterprises to develop their brand and design identity and production processes by using experienced Dutch designers.
Website: ddid.nl/english/index.html

Making Cents International: Making Cents' curricula are effective tools for creating, strengthening and supporting current and future entrepreneurs and delivering financial literacy for all. In over 25 languages, Making Cents offers a range of classroom materials to training institutions, schools and after-school programmes that strengthen the quality and impact of their business and entrepreneurship training and advisory services.
Website: makingcents.com/products_services/curriculum.php

CROWDFUNDING

Betterplace: Betterplace.org is a transparent online donation platform. Anybody can help, on betterplace.org – as an individual or as a group. And equally, anybody can receive help not just large, well-known charitable organizations but also small grass-roots initiatives around the corner from you, or anywhere in the world. The main thing is: everything is transparent.
Website: betterplace.org

Kickstarter: Project creators set a funding goal and deadline. If people like a project, they can pledge money to make it happen. Funding on Kickstarter is all or nothing: projects must reach their funding goals to receive any money.
Website: kickstarter.org

VENTURE CAPITAL

The Social Venture Forum: The Social Venture Forum was started with the objective of informing, inspiring and encouraging actions in favour of harmonious development through social venture in China. In addition to the portal, the Social Venture Forum aims to be a monthly event in Beijing. It gives

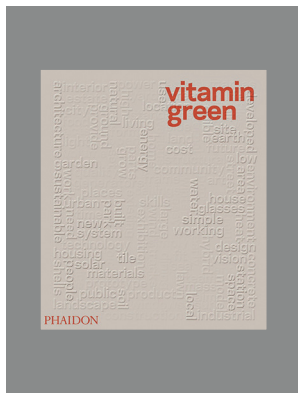
a broad range of people, such as entrepreneurs, NGOs, researchers, investors, institutions, representatives and the press, an opportunity for networking in an ethical environment to meet, exchange ideas and build projects together.
Website: socialventureforum.com

The resources listed here are for information purposes only and do not indicate an endorsement. When seeking funding, do the research and ask questions. If something sounds too good to be true, it probably is.

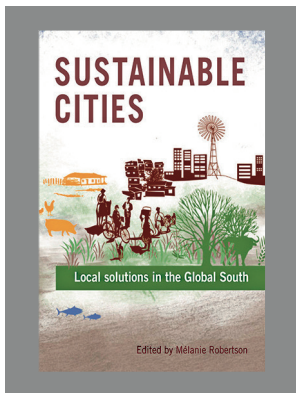
Quotables and Notables

- 01 "I told hotels: Your job is to sell rooms, not to sell garbage," recalls **Yuyun Ismawati**, an environmental engineer and consultant and founder of Bali Fokus in Indonesia (balifokus.asia/balifokus). "We have to protect Bali or else tourists won't want to come here anymore."
- 02 "You don't see drugs and guns any more but you do see lots of rubbish," said **Fernanda Mayrink**, Light's community outreach officer, to the *Financial Times*. Light S.A. is a Brazilian energy company working in the generation, transmission, distribution and marketing of electricity. "This project encourages recycling within the company's concession area and at the same time contributes to sustainable development and the consumer's pocket. Light wins, the customer wins [and] the environment wins."
- 03 "The problem with the renewable-energy industry is that it is too fragmented," **Sultan Al Jaber** told *The Sunday Times*. "This is where the idea for Masdar City came from. We said, 'Let's bring it all together within the same boundaries, like the Silicon Valley model [in California, United States].'" Sultan Al Jaber is the chief executive of Masdar, Abu Dhabi's renewable-energy company. He sees the city as a beacon to show the way for the rest of the Emirate to convert from a highly inefficient consumer of energy to a pioneer in green technology.
- 04 "I never start my design according to the market research or demand. I design by absorbing events, global or local events and even mundane daily life things that happen around me. Consequently, I start to think what will be good and better for these people." Indonesian designer **Singgih Susilo Kartono** makes a range of wooden radios (wooden-radio.com) under the Magno brand (magno-design.com/?id=wr01a).
- 05 "Iceland is widely considered the success story of the geothermal community. The country of just over 300,000 people is now fully powered by renewable forms of energy, with 17 per cent of electricity and 87 per cent of heating needs provided by geothermal energy."
- 06 "I always knew I was a businesswoman," **Lovin Kobusingya** of Kati Fish Farms (katifarms.org) told *The New York Times*. "When I was in high school, I used to sell illegal sweets. And I made money." "I am very happy and proud" of being a female entrepreneur. "When I was young, they said: 'A woman is a woman. A man should take care of you.' But women are actually contributing a lot more than men. We always find ourselves multitasking."
- 07 "Growing cotton is highly chemical- and labour-intensive, which degrades the soil and pays people very low salaries. And the dyeing and colouring processes pollute rivers and people receive low salaries but have to work long hours. The whole textile industry is really bad for the environment." **Hans Martin Galliker** of the NEEMIC (neemic.com) fashion brand based in Beijing, China.

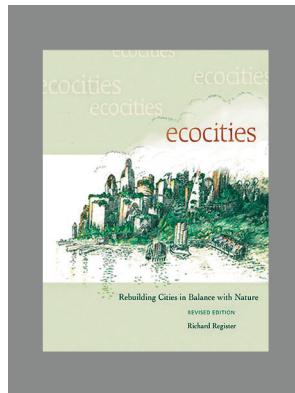
Books, etc.



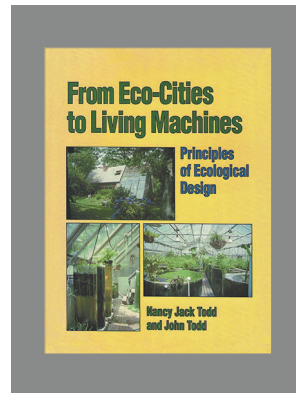
Vitamin Green by Johanna Agerman Ross et al. Publisher: Phaidon. Design is on the cusp of a green revolution. *Vitamin Green* is an inspirational overview of global, contemporary sustainable design and architecture.



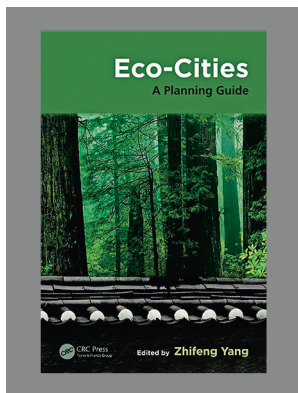
Sustainable Cities: Local Solutions in the Global South by Mélanie Robertson. Publisher: Practical Action Publishing. The book showcases sustainable solutions developed by the urban poor at the margins of urban life in the global South.



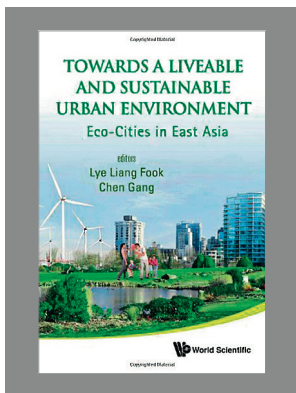
EcoCities: Rebuilding Cities in Balance with Nature by Richard Register. Publisher: New Society Publishers. *EcoCities* is about rebuilding cities and towns based on ecological principles.



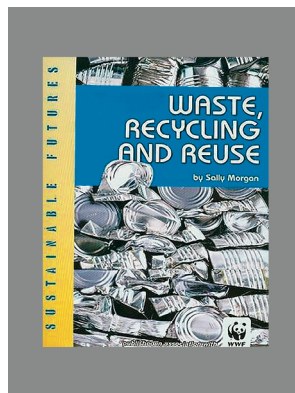
From Eco-Cities to Living Machines: Principles of Ecological Design by Nancy Jack Todd and John Todd. Publisher: North Atlantic Books. The book further develops the idea of eco-cities and introduces living machines, a way to purify wastewaters.



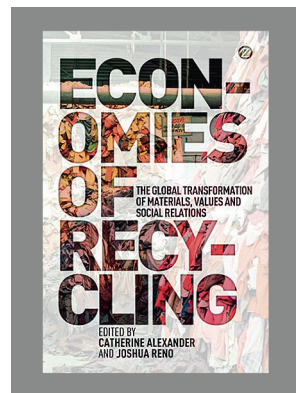
Eco-Cities: A Planning Guide by Zhifeng Yang. Publisher: CRC Press. It details how several cities and regions around the world have already enacted policies that signal the emergence of a paradigm of sustainability in eco-city planning.



Towards a Liveable and Sustainable Urban Environment: Eco-Cities in East Asia by Lye Liang Fook and Chen Gang. Publisher: World Scientific Publishing Company. The "eco-city" proposes an innovative way to design, build and operate cities.



Waste, Recycling and Reuse by Sally Morgan. Publisher: Evans Brothers Ltd. *Waste, Recycling and Reuse* answers questions on kerbside recycling schemes to building homes from old aluminium cans.



Economies of Recycling edited by Catherine Alexander and Joshua Reno. Publisher: Zed Books. Combining fine-grained ethnographic analysis with overviews of international material flows, the book radically changes the way in which we understand economies.

Papers + Reports

Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication

Publisher: UNEP. The Green Economy Report is compiled by the UNEP Green Economy Initiative in collaboration with economists and experts worldwide. It demonstrates that the greening of economies is not generally a drag on growth but rather a new engine of growth.

Website: unep.org/greeneconomy/GreenEconomyReport/tabid/29846/language/en-US/Default.aspx

Green Jobs: Towards Sustainable Work in a Low-Carbon World

Publisher: Worldwatch Institute. The report, produced by Worldwatch Institute, has compiled evidence of green jobs available and how a "green" economy could

create and transform jobs in the future.

Website: unep.org/GreenEconomy/InformationMaterials/Publications/Publication/tabid/4613/language/en-US/Default.aspx?ID=4002

Global Geothermal Development Plan

Publisher: ESMAP, World Bank.

Website (PDF): grmf-eastafrika.org/news/wb-esmap.pdf



Online Content

www.southerninnovator.org

A wide range of online resources is available to Southern entrepreneurs through our various websites. Check it all out!



Issue 1



Mobile Phones
& Information
Technology.

Issue 2



Youth &
Entrepreneurship.

Issue 3



Agribusiness &
Food Security.

Issue 4



Cities &
Urbanization.

Issue 5



Southern Innovator's fifth issue tackles the world's growing waste problem as populations become urban and how this waste can turn into wealth, boosting incomes and conserving the earth's resources.



Southern Innovator website

The **Southern Innovator** website archive is home to stories going back to 2006. This site is intended to be a resource for sharing the solutions and innovations found in the South. It is also a tool for weaving and fostering South-South networking around the world.

Website: www.southerninnovator.org



South-South Global Assets and Technology Exchange

SS-GATE is a virtual and physical platform where entrepreneurs in developing countries can interact and obtain needed technology, assets and finance in a secure environment. SS-GATE facilitates the realization of actual business transactions through a market mechanism, offering both online and offline beginning-to-end support services.

Website: www.ss-gate.org



Global South-South Development Expo

The Global South-South Development Expo (GSSD Expo) is the first-ever Expo solely from the South and for the South. It showcases successful Southern-grown development solutions (SDSs) to address the need to meet the Millennium Development Goals (MDGs).

Website: www.southsouthexpo.org



Global South-South Development Academy

The Global South-South Development Academy is an online, action-oriented service platform that facilitates access to Southern development solutions and Southern expertise for learning and application.

Website: tcdc2.undp.org/GSSDAcademy



Waste

TREND

Texting for Cheaper Food with SokoText

• **SokoText:** SokoText is a smart solution with a big idea: To make food affordable for everyone.

Website: sokotext.com

• **Nailab:** Nailab is a start-up accelerator that offers a 3-to-12 months entrepreneurship programme with a focus on growing innovative technology-driven ideas. This is done by providing business advice, technical training and support, professional mentoring and coaching, access to market, strategic partnerships and, most important, investors.

Website: nailab.co.ke

• **Hult Prize:** The Hult Prize is a start-up accelerator for budding young social entrepreneurs emerging from the world's universities.

Website: hultprize.org

• **White African:** Where Africa and technology collide.

Website: whiteafrican.com/about

INNOVATION

Innovation: Cairo's Green Technology Pioneers

• **Solar Cities:** Founded in 2006, Solar Cities is a non-profit organization that works on capacity-building in developing countries through an industrial ecology approach to sustainable development.

Website: solarcities.blogspot.com

• **Practical Action:** Practical Action has technical drawings and guidelines for making a small biogas digester.

Website: practicalaction.org/practicalanswers/product_info.php?products_id=42

• **The Anaerobic Digestion Community:** Here is an excellent technical explanation of how a digester works, including a short film.

Website: anaerobic-digestion.com

• **China biogas:** China boasts a fast-growing biogas economy using farm waste. Here is a full summary of its experience.

Website: i-sis.org.uk/BiogasChina.php

Solar-powered Mobile Clinics to Boost Rural Health care in Africa

• **Solar-powered Hearing Aid:** "The Solar Ear is an innovative design for a hearing aid that is both low in cost and eco-friendly. By using solar power technology and cost-effective manufacturing, it aims to bring sound to the millions globally who are deaf".

Website: envirogadget.com/solar-powered/solar-powered-hearing-aid

• **Solar-powered Blood Pressure Device Enables Off-grid Medical Aid:** Researchers have developed a new solar-powered device that will allow doctors to measure blood pressure and dispense critical medical aid in developing countries around the world.

Website: inhabitat.com/solar-powered-blood-pressure-device-enables-off-grid-medical-aid

• **The Solarclave, a Solar-powered Medical Instrument Sterilizer:** The Solarclave is made from repurposed parts and is a reflective satellite TV dish focusing sunlight onto a modified wine bottle above it. "The sunlight heats water in the bottle and forces steam into

a pressure cooker below. In field tests in Nicaragua, the Solarclave can reach the CDC-recommended heat and pressure levels – 250°F at 15 psi – in an hour".

Website: popularmechanics.com/science/health/med-tech/7-medical-upgrades-for-developing-countries-6#slide-6

• **Solar Sister:** Solar Sister eradicates energy poverty by empowering women with economic opportunity.

Website: solarsister.org

• **SOL – Solar Powered Laptop:** The world's first fully solar-powered laptop. Calling itself the "All-Terrain Off-Road Sport Utility Laptop", it is made by a Canadian company.

Website: solaptop.com

Saving Water to Make Money

• **World Water Council:** Established in 1996, the World Water Council promotes awareness and builds political commitment to trigger action on critical water issues.

Website: worldwatercouncil.org

• **Water Supply and Sanitation Collaborative Council:** Works on sustainable sanitation, hygiene and water services to all people, with special attention to the underserved poor.

Website: wssc.org

• **Stratus Group:** The Stratus Group is a Brazilian fund looking for sustainable SMEs in Brazil's high-growth green sectors.

Website: stratusbr.com

Solar Bottle Bulbs Light Up Dark Homes

• **D-Lab, MIT: Development through Dialogue, Design and Dissemination:** D-Lab is building a global network of innovators to design and disseminate technologies that meaningfully improve the lives of people living in poverty. The programme mission is pursued through interdisciplinary courses, technology development and community initiatives, all of which emphasize experiential learning, real-world projects, community-led development and scalability.

Website: d-lab.mit.edu

• **d.light Solar:** d.light is a for-profit social enterprise whose purpose is to create new freedoms for customers without access to reliable power so that they can enjoy a brighter future. d.light designs manufactures and distributes solar light and power products throughout the developing world.

Website: dlightdesign.com

• **Liter of Light:** It brings the eco-friendly bottle light to communities living without electricity.

Website: alteroflight.org

Solar Solution to Lack of Electricity in Africa

• **Global Off-Grid Lighting Association:** Global Off-Grid Lighting Association (GOGLA) has been established to act as the industry advocate with a focus on small and medium enterprises. It is a neutral, independent, not-for-profit association created to promote lighting solutions that benefit society and businesses in developing and emerging markets. GOGLA will support industry in the market penetration of clean, quality alternative lighting systems.

Website: globaloff-gridlightingassociation.org

• **Solarpod:** Sunbird Solar/Thousand

Suns manufactures, sources and distributes the portable solar generator range.

Website: thousandsuns.com

• **Little Sun:** An attractive, high-quality solar-powered lamp in the shape of a hand-sized sun developed by artist Olafur Eliasson and engineer Frederik Ottesen.

Website: littlesun.com

Turning Human Waste into Fertilizer: An African Solution

• **Latrines:** World Bank guide to pit latrines.

Website: water.worldbank.org/shw-resource-guide/infrastructure/menu-technical-options/pit-latrines

• **Latrine video:** A video on how to construct a ventilated pit latrine.

Website: youtube.com/watch?v=n4yfAyhIV74

• **Human waste pathogens:** The Control of Pathogens from Human Waste and Their Aquatic Vectors by L. E. Obeng.

Website: jstor.org/discover/10.2307/4312882?uid=3738032&uid=2129&uid=2&uid=70&uid=4&sid=21100919752851

Information Technologies Transforming Africa

• **African Innovator Magazine:** Technology insights for Africa's decision makers. It is a good example of how perceptions have switched to recognizing that the continent is awash with innovators who have a lot to say.

Website: africaninnovatormagazine.com

• **Innovation Prize for Africa:** The Innovation Prize for Africa, begun in 2011, awards US\$100,000 for the top innovation that matches its criteria of marketability, originality, scalability, social impact and business potential.

Website: innovationprizeforafrica.org

• **Tandaa grant programme**

Website: sites.google.com/a/ict.go.ke/tandaa

• **Kenya ICT Board**

Website: www.ict.go.ke

• **iHub Nairobi**

Website: ihub.co.ke

• **mLab East Africa**

Website: mlab.co.ke

• **ccHub (Co-CreationHubNigeria)**

Website: cchubnigeria.com/about-cchub

• **Lusaka, Zambia's Bongohive**

Website: bongohive.com

• **iLabAfrica**

Website: ilabfrica.ac.ke

• **Nailab**

Website: nailab.co.ke

• **iBid Labs**

Website: ibidlabs.com

• **Uganda's HiveColab**

Website: hivecolab.org

• **Afrinnovator:** Technology, innovation and entrepreneurship in Africa.

Website: twitter.com/Afrinnovator

CLEANING UP

A Solution to Stop Garbage from Destroying Tourism

• **Recycling:** A guide to establishing recycling projects based on experience in Mongolia.

Website: tinyurl.com/yfkn2dp

• **Jakarta waste disposal:** A video showing the problem of waste disposal in poor communities in Jakarta.

Website: videosift.com/video/Garbage-ring-The-slums-of-Jakarta-Indonesia

The Water-free South African Bathing Solution

• **Patent:** How to register for a patent in

South Africa.

Website: sabs.co.za

• **SABS Design Institute:** The SABS Design Institute promotes the benefits of good design in order to stimulate the economic and technological development of South Africa.

Website: sabs.co.za

Biogas Digester-in-a-Bag Brings Portability

• **Anaerobic digestion:** The official portal on anaerobic digestion.

Website: biogas-info.co.uk

• **REA Biogas:** REA Biogas has been championing the cause of anaerobic digestion (AD) and has been the unifying force that has helped to bring the industry forward.

Website: biogas.org.uk

• **Practical Action:** Various renewable energy solutions including biogas.

Website: practicalaction.org/biogas_expertise

• **Future Biogas:** Future Biogas specializes in the construction and operation of biogas plants for the United Kingdom.

Website: futurebiogas.com

Ending Gang Violence while Cleaning the Streets in Haiti

• **Social entrepreneurs:** A Bangladesh case study on social entrepreneurs turning refuse into wealth.

Website: proxied.changemakers.net/journal/01may/index.cfm

• **Ethical Superstore:** The Ethical Superstore has a wide range of recycled shopping bags and handbags made to Fair Trade standards.

Website: ethicalsuperstore.com/search/bag/recycled.htm

• **The India Shop:** A collective of women in the slums of Delhi, India, sells fashionable recycled shopping bags online.

Website: theindiashop.co.uk

• **Projecto Alcatraz (Project Alcatraz):** This Venezuelan project offers violent gang members the opportunity to go straight and make their way into the economic mainstream with real job opportunities and skills.

Website: projectoalcatraz.org/home_eng.php

Turning Animal Waste into Paper

• **Creative Paper Wales:** Makers of Sheep Poo Paper, this company in Wales uses sheep dung to make a range of paper products. Sheep are plentiful in Wales and are found all over the hills grazing.

Website: creativepaperwales.co.uk/index.aspx

• **Paper High:** Paper High sells online paper products made from Sri Lankan elephant dung. This includes notebooks, greeting cards, photo frames and photo albums.

Website: paperhigh.com

• **Red Dot:** Red Dot stands for belonging to the best in design and business. It champions design in business through awards and events.

Website: en.red-dot.org

How an Eco-city Works

• **Tianjin Eco-city:** The Sino-Singapore Tianjin Eco-city's vision is to be a thriving city that is socially harmonious, environmentally friendly and resource-efficient.

Website: tianjineco.city.gov.sg



Contacts and Resources

Global South Urbanization Does Not Have to Harm Biodiversity

- **Environmental Public Awareness Handbook:** Case Studies and Lessons Learned in Mongolia.

Website: tinyurl.com/yhjy7dh

- **Hyderabad Case Study:** During the recent United Nations biodiversity talks in Hyderabad, the International Union for Conservation of Nature gave journalists the opportunity to see how biodiversity can thrive in the middle of a bustling metropolis.

Website: rtcc.org/hyderabad-a-showcase-of-urban-biodiversity

- **UNEP:** A Global Partnership on Cities and Biodiversity was launched by UNEP, the Secretariat of the Convention on Biological Diversity (CBD), UN-Habitat, ICLEI, IUCN Countdown 2010, UNITAR, UNESCO and a Steering Group of Mayors from Curitiba, Montreal, Bonn, Nagoya and Johannesburg to bring together existing initiatives on cities and biodiversity.

Website: unep.org/urban_environment/issues/biodiversity.asp

- **Nature in the City:** Nature in the City, a project of Earth Island Institute, is San Francisco's first organization wholly dedicated to ecological conservation, restoration and stewardship of the San Francisco bioregion.

Website: natureinthecity.org

Recycling

RECYCLING FOR PROFIT

Banning of Plastic Bags and Containers Brings New Opportunities

- **Change Makers:** A Bangladesh case study on social entrepreneurs turning refuse into wealth.

Website: proxied.changemakers.net/journal/01may/index.cfm

- **Recycle Bag:** Hong Kong's first enterprise to make and sell recycled bags.

Website: recyclebag.net

Fashion Recycling: How Southern Designers Are Reusing and Making Money

- **RE: Fashion Awards:** The RE: Fashion Awards show is a brand new fashion phenomenon, set to transform social and environmental standards in the fashion industry within a decade.

Website: refashionawards.org

- **Ethical Fashion Show:** Isabelle Quehe, who established the event, said "You almost never see designers from developing countries doing shows in Paris, so this brings together natural products, local fair labour, respect for the environment and finding sales outlets in Paris." Potential designers and exhibitors can contact the Ethical Fashion Show by sending collection photos and a brief explanation on how the fashions contribute to the ethical fashion movement.

Send contributions to: 4, rue Trousseau, 75011 Paris, France.

Email: unilove@wanadoo.fr

Creating Green Fashion in China

- **Ethical Fashion Forum:** The Ethical Fashion Forum is the industry body dedicated to a sustainable future for fashion. A not-for-profit organization, EFF aims to make it easy for fashion

professionals to integrate sustainability into the heart of what they do.

Website: ethicalfashionforum.com

- **Hong Kong Organic Textile Association:** Its mission is to promote organic textiles in Hong Kong.

Website: facebook.com/HKOrganicTextileAssociation

- **Upcycling:** Tips on how to upcycle.

Website: independent.co.uk/property/interiors/the-insider-how-to-upcycle-without-much-effort-2343100.html

- **Lookbook:** How to create a Lookbook for a fashion brand.

Website: noisetecademy.com/2011/05/creating-a-lookbook

Recycling Waste to Boost Incomes and Opportunities

- **EPAP guide:** Based on extensive research throughout Mongolia by UNDP, this guide includes the application of the Blue Bag project to Mongolia's sprawling slum districts surrounding the capital, Ulaanbaatar.

Website: tinyurl.com/yfkn2dp

ENERGY

Kenya Turns to Geothermal Energy for Electricity and Growth

- **Home geothermal:** A feature from *Popular Mechanics* on how geothermal can work in the home.

Website: popularmechanics.com/science/energy/hydropowergeothermal/4331401

- **Geothermal Energy Systems:** A South African company specializing in setting up geothermal systems for customers.

Website: africanecossystems.co.za/about%20us.html

- **Geothermal Education Office:** The basics on tapping this energy source and how it works.

Website: geothermal.marin.org/pwrheat.html

- **Menengai Geothermal Development Project:** A detailed explanation of the project.

Website (PDF): climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/SREP%205%20Kenya%20Project.pdf

Geothermal Energy to Boost Development of the Global South

- **Geothermal:** Geothermal basics from the Geothermal Energy Association.

Website: geo-energy.org/currentUse.aspx

- **Children:** Geothermal information for children.

Website: eia.gov/kids/energy.cfm?page=geothermal_home-basics

- **Geoexchange:** A website connecting contractors, manufacturers, drilling contractors, ground loop installers, engineers, designers, distributors, architects, builders, utilities, training, financing, software and suppliers.

Website: geoexchange.org

- **Iceland Geothermal:** Icelandic geothermal cluster mapping, geothermal energy consumption.

Website: icelandgeothermal.is/index.php/e-samstarfsverkefni/data-collection.html

Prisons with a Green Solution

- **China:** China is boasting a fast-growing biogas economy using farm waste. Here is a full summary of its experience.

Website: i-sis.org.uk/BiogasChina.php

African Fuel Pioneer Uses Crisis to Innovate

- **Biodiesel:** A website with all the details on biodiesel and how to make it.

Website: biodiesel.org

- **Making biodiesel:** How to make your own biodiesel.

Website: journeytoforever.org/biodiesel_make.html

- **Oilgae:** Oilgae is the global information support resource for the algae fuels industry.

Website: oilgae.com

- **Chlorella:** Algae as a superfood and cancer fighter: chlorella.

Website: en.wikipedia.org/wiki/Chlorella

Indonesian Wooden Radio Succeeds with Good Design

- **Cradle to Cradle: Remaking the Way We Make Things** by William McDonough and Michael Braungart. It is a manifesto calling for the transformation of human industry through ecologically intelligent design.

Website: mcdonough.com/cradle_to_cradle.htm

- **Rio+20:** At the Rio+20 Conference, world leaders, along with thousands of participants from governments, the private sector, NGOs and other groups, will come together to shape how we can reduce poverty, advance social equity and ensure environmental protection on an ever more crowded planet to get to the future we want.

Website: uncsd2012.org

Powerful Solar Light Spurring Income-making Opportunities

- **Solar:** More information on how renewable solar technologies work.

Website: energysavingtrust.org.uk/Generating-energy/Choosing-a-renewable-technology/Solar-panels-PV

Additional Resources

- **Waste**

Veolia Environment: Veolia manages municipal and industrial waste processes, from flow logistics upstream to technologically advanced treatments downstream. As the only global operator to provide a complete range of waste management solutions, Veolia covers the entire waste cycle, including urban cleaning services, soil and site remediation, collection, sorting, transfer, treatment and recycling/recovery.

Website: veolia.com

Viridor: Viridor is one of the United Kingdom's leading recycling, renewable energy and waste management companies. Part of the FTSE 250 Pennon Group, Viridor puts waste into action, transforming it into high-quality recyclables, raw materials and energy. Each year, Viridor transforms over two million tonnes of materials into high-quality recycle and yet more into over 760 gigawatt hours of renewable energy. In total, it safely manages over eight million tonnes of recyclables and waste materials for customers from all sectors across the United Kingdom.

Website: viridor.co.uk

- **Recycling**

Handbook of Plastics Recycling by F. de la Mantia. Publisher: Smithers Rapra Technology.

Website: amazon.com

100 Products That Empower People by Emily Pilloton. Publisher: Metropolis Books.

Website: amazon.com

Quick Resources

African Development Bank: The overarching objective of the African Development Bank (AfDB) Group is to spur sustainable economic development and social progress in its regional member countries (RMCs), thus contributing to poverty reduction.

Website: afdb.org/en



Buckminster Fuller Institute: The Buckminster Fuller Institute is dedicated to accelerating the development and deployment of solutions which radically advance human well-being and the health of our planet's ecosystems. We aim to deeply influence the ascendance of a new generation of design-science pioneers who are leading the creation of an abundant and restorative world economy that benefits all humanity.

Website: bfi.org



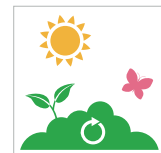
Bloomberg New Energy Finance:

Bloomberg helps clients to navigate the global, European, North American and Australian carbon markets. Website: about.bnef.com/coverage/carbon



Cradle to Cradle Products Innovation Institute: Cradle to cradle product certification is both comprehensive and rigorous. It requires a paradigm shift in thinking about how a product is designed, what's in it, and where it goes after use. As a guidance system for product designers and manufacturers, it leads to the creation of products that redefine quality, beauty and innovation.

Website: c2ccertified.org





Dutch Design in Development: DDiD is the agency for eco design, sustainable production and fair trade. We work with Dutch importers and designers and connect them to local producers in developing countries and emerging markets. Together products are made that are both profitable and socially and environmentally sustainable.
Website: didd.nl



Global Geothermal Development Plan: The World Bank launched a fund to expand renewable energy generation in developing countries with a substantial investment in geothermal power. The Global Geothermal Development Plan (GGDP) will provide assistance and support in bringing geothermal energy – a currently underutilized resource – into the mainstream as a clean, cheap and reliable source of locally produced power. The fund was launched at the Geothermal Conference in Reykjavik, Iceland, a country in which around 26.2 per cent of energy is supplied by geothermal sources.
Website (PDF): esmap.org/sites/esmap.org/files/ESMAP_Paris_Geothermal_Energy_KEF_Optimized.pdf



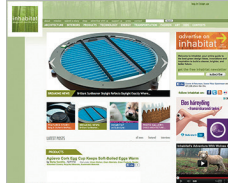
Geothermal | National Energy Authority of Iceland: Iceland is a pioneer in the use of geothermal energy for space heating. Generating electricity with geothermal energy has increased significantly in recent years. Geothermal power facilities currently generate 25 per cent of the country's total electricity production.
Website: nea.is/geothermal



Green Building Council: The U.S. Green Building Council (USGBC) is a 501(c)(3) non-profit organization committed to a prosperous and sustainable future for our nation through cost-efficient and energy-saving green buildings.
Website: usgbc.org



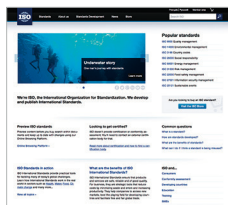
Inhabitat: Design for a Better World: Inhabitat.com is a weblog devoted to the future of design, tracking the innovations in technology, practices and materials that are pushing architecture and home design towards a smarter and more sustainable future.
Website: inhabitat.com



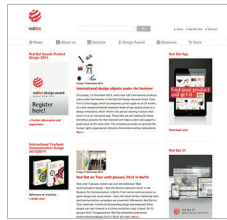
International Carbon Market: The European Union emissions trading system (EU ETS) is by far the world's biggest carbon market and the core of the international carbon market. To reduce global greenhouse gas emissions most cost-effectively, the international carbon market needs to be developed by creating a network of linked cap-and-trade systems. In this process, international crediting mechanisms can play a valuable but transitional role.
Website: ec.europa.eu/clima/policies/ets/linking



International Organization for Standardization (ISO): ISO is the world's largest developer of voluntary International Standards. International Standards give state-of-the-art specifications for products, services and good practice, helping to make industry more efficient and effective. Developed through global consensus, they help to break down barriers to international trade.
Website: iso.org/iso/home.html



Red Dot: Red Dot stands for belonging to the best in design and business. Our international design competition, the "Red Dot Design Award", is aimed at all those who would like to distinguish their business activities through design. The distinction is based on the principle of selection and presentation. Excellent design is selected by competent expert juries in the areas of product design, communication design and design concepts.
Website: en.red-dot.org



United Nations Green Climate Fund: The purpose of the Green Climate Fund is to make a significant and ambitious contribution to the global efforts towards attaining the goals set by the international community to combat climate change.
Website: gcfund.net



World Bank: The World Bank is a vital source of financial and technical assistance to developing countries around the world. We are not a bank in the ordinary sense but a unique partnership to reduce poverty and support development. The World Bank Group comprises five institutions managed by their member countries.
Website: worldbank.org



Key Terms and Abbreviations

Apps: Apps is an abbreviation for applications. An app is a piece of software. It can run on the Internet, on your computer or on your phone or other electronic device.

Carrying capacity: Noun: Ecology the number of people, animals, or crops which a region can support without environmental degradation (*Oxford English Dictionary*).

Eminent domain: Noun: The right of a government or its agent to expropriate private property for public use, with payment of compensation. In the United Kingdom of Great Britain and Northern Ireland, it is used chiefly of international law, whereas in the United States, it is used of federal and state governments (*Oxford English Dictionary*).

Ecological footprint: Noun: The impact of a person or community on the environment, expressed as the amount of land required to sustain their use of natural resources (*Oxford English Dictionary*).

Geodesic dome: Noun: A dome constructed of short struts following geodesic lines and forming an open framework of triangles or polygons. The principles of its construction were described by Buckminster Fuller (*Oxford English Dictionary*).

Hexagon: Noun: A plane figure with six straight sides and angles (*Oxford English Dictionary*).

Recycling: Verb: Convert [waste] into reusable material (*Oxford English Dictionary*).

Smartphone: Noun: A mobile phone that is able to perform many of the functions of a computer, typically having a relatively large screen and an operating system capable of running general-purpose applications (*Oxford English Dictionary*).

UNDP: The United Nations Development Programme is the United Nations' global development network.

UNEP: UNEP, established in 1972, is the voice for the environment within the United Nations system. UNEP acts as a catalyst, advocate, educator and facilitator to promote the wise use and sustainable development of the global environment.

How to read Southern Innovator

Icons indicate sections in the magazine. Turn the pages and look for the icon at the top of the page.

Waste



Recycling



Southern Innovator Knowledge Summary



Information



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SCIENCE, TECHNOLOGY
AND INNOVATION

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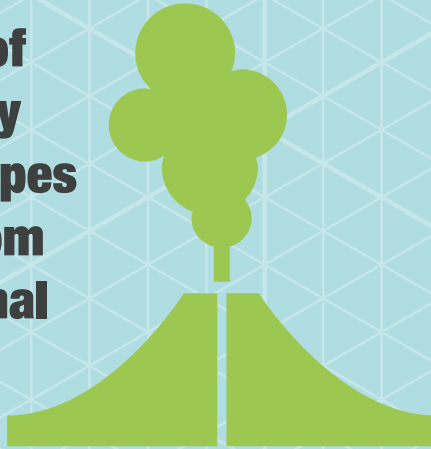




**World population
in 2050: 9 billion**

27%

**Amount of
electricity
Kenya hopes
to get from
geothermal
sources
by 2031**



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**70%: Global increase in urban
solid waste by 2025**

